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APRIL 1945

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AMERICAN FORESTS

VOLUME 51

APRIL, 1945

NUMBER 4

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American Forests

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THE
AMERICAN FORESTRY
ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—*AMERICAN FORESTS*—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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My Favorite Tree



By **LOWELL THOMAS**

Famous Author and Radio Commentator

Hur, passed it innumerable times when he was courting a Quaker Hill girl, and when he came to live there. Admiral Warden who commanded the *Monitor* in the battle of the *Monitor* and *Merrimac*, the first clash between ironclads in history, passed the tree hundreds of times, when he returned to the Hill. In recent years, hundreds of important figures of our day have passed this lordly elm, among them at least two Presidents of the United States, Herbert Hoover and Franklin D. Roosevelt. Governor Dewey has been saluting it several times a week, for a number of years now.

I suppose one reason I am so fond of this patriarch of trees is because when I pass it, I have only a mile more to go, and then I'll be home.

Among my other favorites are the giant sequoias of California, those towering monarchs that were alive centuries before Columbus came to America, before the Norman conquest and even before the fall of the Roman Empire and the Birth of Christ. Anyone who doesn't feel humble in the presence of those trees is hopeless.

In Australia I succumbed to the magic of some of the giant eucalyptus trees. And I recall the shock with which I discovered that many trees in Australia shed their bark instead of their leaves.

I could go on indefinitely, singing the praises of the giant banyan tree in the park at Calcutta which is said to cover a greater area than any other tree in the world; the immense trees of the jungles of Brazil, Africa, Burma and Malaya, that I have seen from the backs of elephants or from native boats, or from the air.

But, I'd better stop or I'll be writing a book about trees. And, if I ever do, I'll devote at least one chapter to the gnarled scrub oak and pines that I have so often come upon high up in the mountains, near timberline, where they are forced to bow low and bend to their knees before the fury of the gods of the winds.

TO ME all trees are so glorious that I find it impossible to single out any particular one as my favorite. But here are a few that have aroused my special enthusiasm: One is a huge maple at the foot of Quaker Hill, in the southeastern corner of Dutchess County, New York. Around and above it is a meadow, and I presume this maple gets its majestic dimensions and its symmetry, from the perfect drainage, and the fact that there are no other trees within about a hundred yards of it. Some years ago a tree expert stopped at our farm, and took various measurements, including the spread of the branches. He said it was one of the most impressive he had ever seen.

Another of my favorites is a giant elm on our Quaker Hill Road, a mile off Route 22, that runs from New York to Canada. I imagine it's somewhere between two and three hundred years old, and was there when the Pilgrim Fathers landed at Plymouth Rock, and long before the first white man trod our lower Berkshire Hills. It was there in colonial days when the Dutch in the Hudson and Harlem valleys were bickering with the English colonists in nearby Connecticut. It was there when the first shot that led up to the Revolutionary War was fired just around the bend. It watched Washington's armies tramp by and Washington's cannon rolling up the hill, when the Continental Army spent a winter on the lovely ridge that we call Quaker Hill. Lew Wallace, author of *Ben*

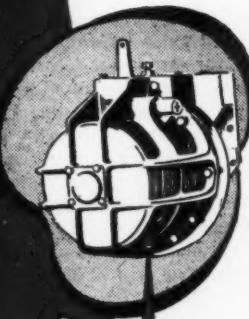
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THE FOREST EXCHANGE . . .

They Like Us in Holland

SIR: Just want to let you know that my AMERICAN FORESTS has been coming through with comparative regularity—as much as circumstances will permit—and that I get lot of pleasure from it. I look forward to the coming of each new issue, a little impatiently I'm afraid. One of the boys who helps me read them is interested in forestry as a vocation. He is from Los Angeles, which in itself is sufficient grounds for disagreement (I'm a Seattleite), but we agree wholeheartedly that AMERICAN FORESTS is a good magazine, keeping us in touch with things we miss at home.—T. J. Robert L. Peightal, Somewhere in Holland.

On the Character of Tropical Forests

SIR: In the February issue, Henry S. Kernan, in "Cinchona Hunter," makes the following statements: "The rule is

that the nearer the equator, the greater the proportion of the flora in tree form; and the Sierra is only eleven degrees north. A compensating factor is that the variety in the leaves, bark, and especially the flowers is much greater than in our woods."

A few hours before reading this, I read an article in *Scientific Monthly*, entitled "The Hospital Tree," by Alexander F. Skutch, in which the following statement was made: "In tropical forests, the leaf shape of scores and hundreds of kinds of trees is monotonous in the extreme, very different from the attractive variety of outline of the foliage of the oaks, maples, beeches, and the chestnuts of a northern forest."

Such contradictory statements by eminent authors might be the basis of a friendly controversy that would be interesting to your readers. — Carl L. Bausch, Rochester, New York.

Thank You

SIR: I never receive a copy of AMERICAN FORESTS without thinking that I should sit down and write you—to tell you what an inspiration it is to me to have this publication come with such regularity. In these days, more it seems to me than ever before, the thoughts of our great forests are healing. You do everything that can be done to make the magazine interesting and vital. — Allen Eaton, New York City.

Three Forks Again

SIR: I have been quite interested in the several articles appearing in the AMERICAN FORESTS pertaining to the apparent differences of opinion between Tom Alexander and Louise and Stanley Cain in regard to the Three Forks area in the Great Smoky Mountains. I am not a forestry expert nor one who is conver-

(Turn to page 194)

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Forest Resource Appraisal
JOHN B. WOODS, Director

JOHN C. REDINGTON, Field Secretary

In your hands!

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The Voice of Spring

What wakest thou, Spring?—sweet voices in the woods. . . .

The bright waters, too, they hear thy call,
Spring, the awakener! thou has burst their sleep!
Amidst the hollows of the rocks their fall
Makes melody, and in the forests deep,
Where sudden sparkles and blue gleams betray
Their windings to the day.

—Reprinted.

Editorial

LOOKING AHEAD

RESULTS now beginning to come from the Forest Resource Appraisal serve to emphasize the foresight of the Directors of The American Forestry Association when, in 1942, they adopted a wartime program in which this project was given first importance from the standpoint of long-range conservation of the nation's forests. At the time, no one knew within any bounds of certainty how long the war might last, or the extent to which its demands for wood might alter the country's situation in respect to forest resources. Further, no one seemed to be giving thought to this latter phase of the war catastrophe and its possible postwar effects upon public and industrial welfare.

The Directors believed that the war would not be short-lived and that it was certain to make heavy drains locally and nationally upon our forests. And they reasoned that when reconversion to a peace based upon American principles of free enterprise must eventually be faced, a down-to-the-minute inventory of forest conditions currently prevailing would be essential to intelligent handling of problems involving future wood supplies and perpetuation of the country's forest resources. Otherwise the nation, and the states and industries which compose it, would be compelled to deal with this great resource by guesswork based upon incomplete and outdated prewar information. Such an eventuality, they foresaw, might easily result in mistakes that could demoralize industry and adversely confuse the progress of forest conservation for years to come.

Thus looking ahead, the Directors announced the determination of the Association to sponsor a wartime appraisal and to lead it to a successful conclusion. It was a large undertaking. First, the cost of the work, estimated at \$250,000, had to be underwritten by voluntary contributions. Following this was the all-important task of engaging competent crews for field work. Three years were

determined as a reasonable period in which the appraisal could be made. In order that results might be as complete and accurate as possible, the association invited the active cooperation of all federal, state and private agencies in a position to help gather and assemble the facts during the course of the war. The response was highly gratifying, especially from state forestry departments and from forest industries dependent upon continuous supplies of wood in the postwar years.

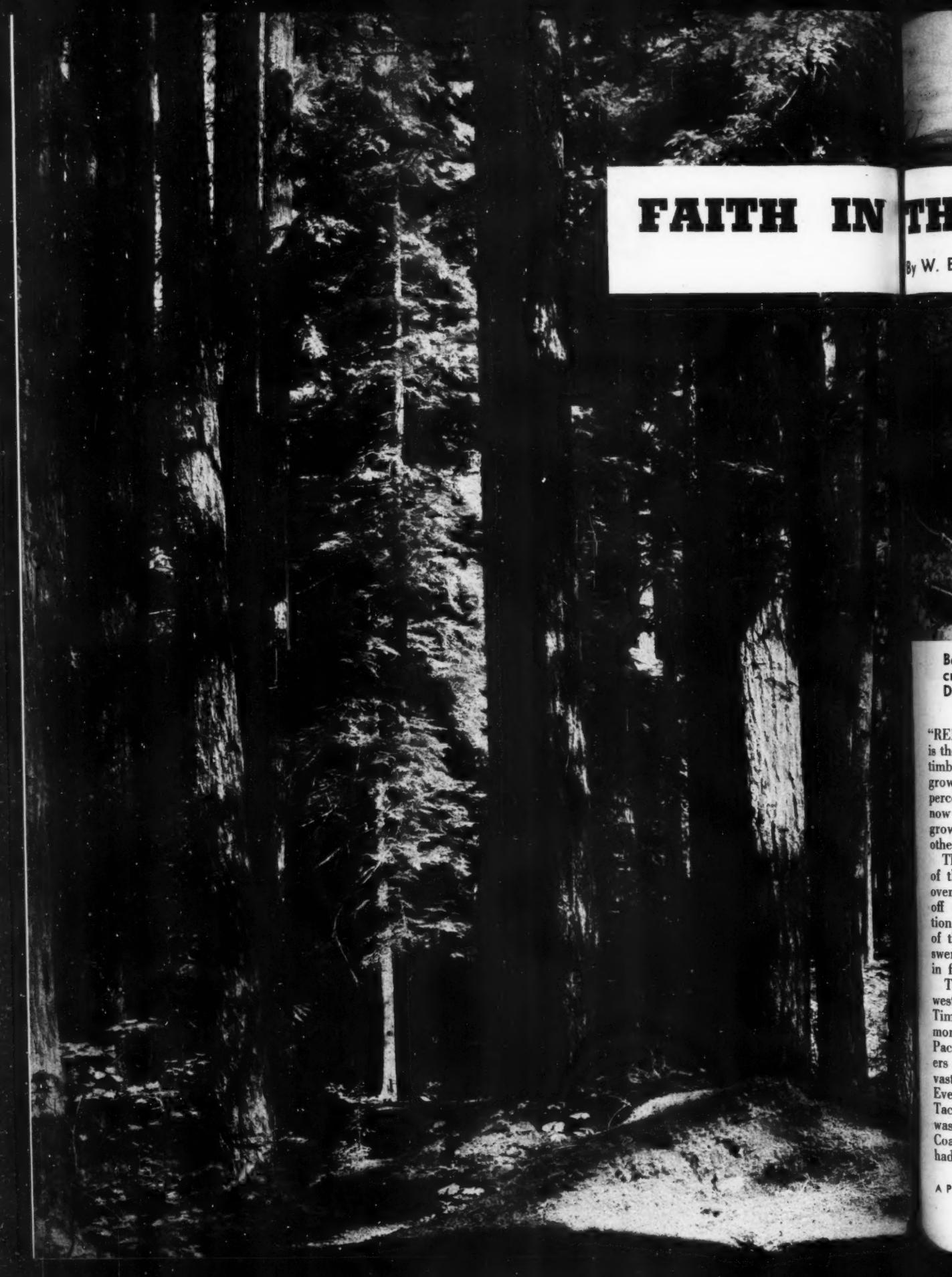
Early in 1944 sufficient funds had been raised to warrant starting field work. Since that time the project has gathered speed, thanks to the active field cooperation of state forestry departments and other state agencies and the financial support that was forthcoming from individuals, companies and organizations throughout the country. To date, forestry conditions in eight states have been inventoried and by the close of the year it is anticipated that an appraisal for the whole country will be more than two-thirds completed.

An example of the results now coming from the project may be had from "Michigan's Forests—a Great Resource," by J. A. Donery, which will appear in the May issue. This summarizes appraisal findings in that state. Subsequent issues of *AMERICAN FORESTS* will carry each month similar summaries for other states as the appraisal work is completed. Final state reports will be in much more detail and wherever possible will cover forest conditions county by county. Obviously a general report on the national situation will not be possible until the war is ended and all states have been inventoried. Such a report should be available during the last half of 1946.

In the meantime requests for appraisal results testify in increasing volume to the value and timeliness of the project. There is widespread awakening throughout the country to the need of the best down-to-date information possi-

ble if postwar policies pertaining to forest questions are to be soundly based. This applies not only to the nation as a whole but to individual states and to scores of industries which are desirous of planning now to meet their future need of raw wood. For example, the railroads wish reliable information upon which to base plans for meeting future crosstie requirements; the electric and power companies wish to have the facts regarding available supplies of poles in the years to come; the furniture industry wishes to plan on the basis of dependable knowledge in respect to available furniture woods. Scores of other industries are in similar situations while many states are anxious for appraisal data for use in formulating intelligent state forest policies.

In short, the need of this inventory is being recognized throughout the whole economic framework of the country because of the dependence of both industry and agriculture upon future supplies of forest products. A broader value is worthy of mention because of its timeliness. This country is now concerned with the question of supplying European nations with food and raw materials for relief and for reconstruction. It is certain that there will be insistent foreign demands for lumber and other forest products. To what extent can such demands be met without denying our own needs or depleting our own forests? Certainly it would be a national catastrophe if political emotionalism to help other countries should barter away through trade agreements or otherwise forest supplies in excess of what our forests can sustain and at the same time meet the present and future needs of the United States. Appraisal results should furnish a yardstick by which that tremendously important question can be measured and answered. Without such a yardstick, our own forest resources and forest economy might readily be sacrificed on the altar of "we didn't have the facts."



FAITH IN THE

By W. E.

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THE LAND

By W. B. GREELEY



Behind the wealth of virgin timber, those who led the Pacific Northwest forest industries from timber mining to timber cropping sensed that the greatest asset of the region was hidden in the soil itself—the reproductive power of the Douglasfir forest. Above is part of the 150,000-acre "tree farm" started by Mark Reed in the early days of King Timber.

"REFOREST them. The Pacific Coast is the nation's great woodlot. Some day timber will sell for what it costs to grow it, as other crops do. Fully fifty percent of the land where the forests now stand is better adapted to the growth of another forest than to any other purpose."

Thirty-three years ago the good folk of the Chehalis Valley were concerned over their widening stretches of logged-off timberland. Schemes for colonization with settlers were in the air. At one of their meetings the question was answered by a lanky Hoosier, Lincoln-like in figure and manner of speech.

The speaker was George S. Long. As western manager of the Weyerhaeuser Timber Company, he could speak for more acres than any other man in the Pacific Northwest. But there were others who looked beyond the stumps and vast stretches of virgin timber. One was Everett Griggs, head of the St. Paul and Tacoma Lumber Company. Another was Mark Reed of Shelton. These West Coast lumbermen, and others like them, had faith in the land. Behind all the

wealth of virgin timber, they sensed that the greatest asset of the Pacific Northwest was hidden in the soil itself. It was the reproductive power of the Douglasfir forest.

The American way of life usually produces men to take the lead in necessary change. The three business men of whom this story is written led the forest industry of the Pacific Northwest from timber mining to timber cropping. The conviction came to them that here, at the Pacific Ocean, they should put an end to migratory lumbering. Their story is worth telling because they started an industrial evolution.

There were a trillion feet of timber in the Douglasfir forests of the Pacific Northwest. Timber of unbelievable size and quality! And it was exceedingly cheap. Beside the thousands of claims and little holdings, were the great railroad grants and state grants and a hinterland of public domain still open to the locator. Even after the early flurries of speculation, fine Northwestern stumpage could be had almost as freely as when Captain Vancouver sent Ship-

master Puget ashore to cut masts in 1793.

Then, in the last quarter of the century, the lumber industry moved in. It had the machines, the skill and the capital for mass production. The Northwest was the last great forest region left—in the industry's sweep across the country.

Came the heyday of American lumbering. Engineers spanned canyons with wire cable; built hoists up steep mountain sides; and tackled all the problems of moving six and eight ton logs through rugged hills with the energy and resourcefulness of Paul Bunyan. New and more powerful logging machines; bigger and better sawmills! Mass production passed all former marks. Single outfits brought in 400,000,000 feet of logs a year; single sawmills cut 1,000,000 feet of lumber a day.

Douglasfir had to pay its freight across the continent and undersell the familiar woods of the East. Costs were pared down to the last nickel. Volume production was the industry's god; it became the industry's devil. When

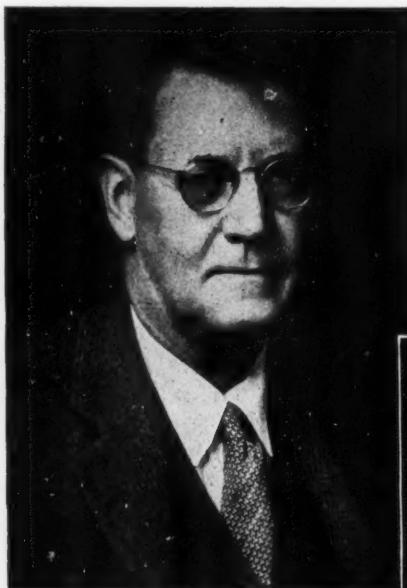
building and lumber consumption dropped off, their own Frankenstein drove the mills into cut-throat competition. Timber remained excessively cheap. Men conserve things which have value; and what business man would spend money to grow timber when he could still buy virgin stuff over the far ridge for fifty cents a thousand feet?

Because the Pacific Northwest was the last of our continental forest areas to be reached by massed industry, its high tide of exploitation collided—head on—

other terrible blazes of 1902 awakened the Northwest to its forest fire hazard. Mr. Long took a quiet lead in driving home the need for organization and preparedness. He devised the first forest fire legislation of the Northwest, enacted by Washington in 1903. Then came the organization of Forest Patrol Associations throughout Oregon, Washington and Idaho. Adjoining land owners pooled their protection forces and equipment under unified direction and divided its cost by the acre.

The forty years since the Yacolt burn have written a remarkable fire code in Oregon and Washington, a code of protection requirements—first tested and proven by lumbermen on their own lands, then imposed by state law. Few sessions of either the Washington or Oregon legislatures have not witnessed the adoption of some further defense against Enemy Fire, proposed by groups in the industry who had already tried it out. Thus have been put into

complete cooperation among all the allies in the field, federal, state and private. In 1909 he brought into being the Western Forestry and Conservation Association. For British Columbia and the forest states of the West, it was to be the Grand Lodge, the clearing house of everything pertaining to forest protection and practical timber growing. Particularly was it to be the meeting ground for the state and federal services with private forest owners and their organizations. "Western Forestry" was led

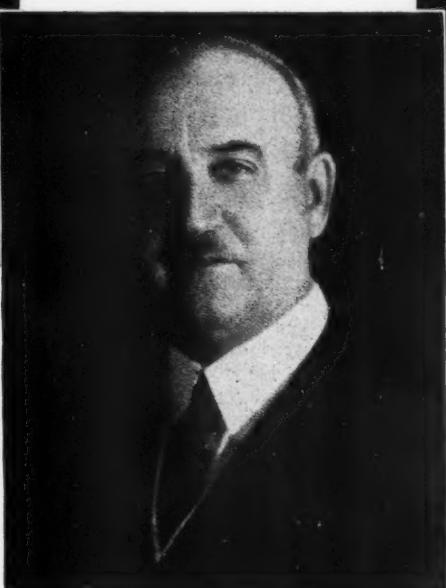


MARK REED
Became a community builder

with the conservation crusade of Theodore Roosevelt. Much was going on in the Douglasfir country that might well arouse public concern. The toll of forest fires mounted as settlement and logging spread. Tax-delinquent cutovers were crowding the county rolls. While there were numerous examples of the marvelous reproductive power of Douglasfir, stretches of burnt-out, logged-out land bordered many highways and gave the countryside an impression of vast desolation. Recurring prophecies of timber famine put West Coast forest industry on the spot. It was caught red-handed. Thunders from the left gave warning of the nationalization of forest land or regimentation of forest industry under federal control.

Then from sawmills and logging camps, leaders appeared. George Long had left the Wisconsin pineries in 1900. Gradually his human sagacity and instinct for doing first things first were felt.

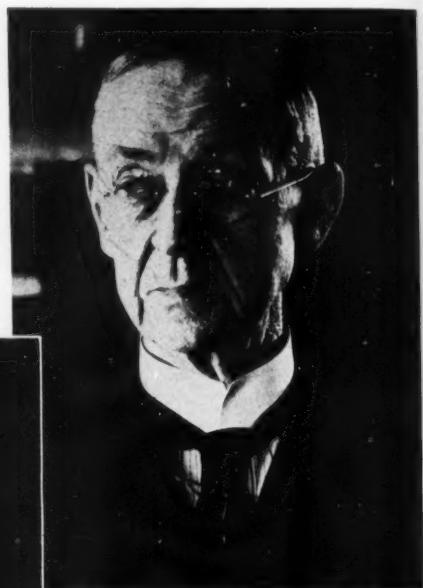
The 600,000 acre Yacolt burn and



EVERETT GRIGGS
Rejected "cut-out and get-out" philosophy

state law *compulsory* fire patrol of all forest lands at the owners' expense; *compulsory* disposal of slashings; requirement after requirement for the equipment of logging camps with pumps and other fire-fighting tools; obligatory shut-downs of logging machines in hazardous weather.

George Long and his co-workers quickly saw that effective control of forest fires called for a new craftsmanship, new devices, the pooling of ideas and experience. Above all, it demanded



GEORGE S. LONG
Had faith in the land

for many years by a forester of exceptional ability—E. T. Allen, pioneer organizer of the federal Forest Service in the Pacific Northwest. Its accomplishments in cooperation between public and private agencies was the inspiration for the Clarke-McNary Act, of 1924, which launched a national policy of forest fire control.

In 1911 the association published a manual on practical forestry in the Pacific Northwest and offered its services to any forest owner.

Mr. Long never lost his belief in timber growing and a perpetual forest industry, although he encountered many difficulties. These became critical when a rising tide of forest taxation swept the Northwest in the second and third decades of the century. But he held to the conviction that a way would be found to keep his land growing trees. His company sold quantities of timber to other operators but *kept the land*. Faith in the land kept the great bulk of the Weyerhaeuser acres intact for the

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tree farming of a generation later.

George Long's land philosophy was put plainly to the Clarke-McNary Congressional Committee on Forestry in 1923.

"We are exceedingly anxious to get into this reforestation game. We realize the necessity for it very keenly; and out here where the West ends, we want to begin to grow a new forest and will do it when we have the slightest chance of making it a possibly profitable enterprise."

Through the smoke of after-dinner cigars, Mr. Long urged the Congressmen to have confidence in the industry. "Help lumbermen with forest fires and forest taxes," he said, "and they will find a way to regrow the timber." He reminded them of the Missouri proverb that there is honey in a dung heap but it takes a bee to get it out.

George Long passed on; but his successors found their chance in 1931. Washington passed a law which permits taxing cutover and regrowing forest lands on a bare land assessment with a yield tax on the value of any future crop when harvested. From that time on, the company's program of permanent forests steadily took shape.

Another plain tale from the hills!

In 1891, fresh from Yale, Everett Griggs took his first job—with the St. Paul and Tacoma Lumber Company. It was the first of the northwestern mills to build up its trade aggressively in eastern "rail" markets and one of the best-known on Puget Sound. Everett Griggs became its president in 1908.

He was a typical American business man, active in industry and civic affairs, of unbounded faith in the American way of life. He was major in the Spruce Production Division of World War I; president of the National Lumber Manufacturers Association, and director of the United States Chamber of Commerce. Pride of family, pride of his company's place in the industry, pride in its enduring reputation with the trade were strong in "the Major's" make-up. He never accepted the "cut-out and get-out" timber philosophy of his day. Not for St. Paul and Tacoma Lumber Company! Not an acre of its land should default for taxes! Timber growing and lumber manufacture were one and the same for an institution that was in business to stay.

Major Griggs engaged the Western Forestry and Conservation Association to study and classify his company's lands. Later he employed one of their



The Pacific Northwest is headed towards a forest economy like that of Sweden. This area was logged by Everett Griggs' company less than forty years ago

men as company forester. With characteristic enthusiasm, he tramped the woods, studied restocking and growth rates. He was zealous in interesting employees in timber growing as part of St. Paul and Tacoma's long-range planning. He put settlers and school boys to work planting trees, in order to teach respect for the young forest and care with fire. Notices posted on highways and byways through cutover lands told the world

to his own code of *noblesse oblige*. When Major Griggs retired in 1933, the company's original forest holdings had been blocked out to 70,000 acres and constituted one of the most productive "Tree Farms" in the Pacific Northwest.

The beginnings of the slow change from timber mining to timber cropping in the Douglasfir country were as many as the roots of one of its big trees. The life of a third lumberman of forty years

foresight was an offer of the Mason County Logging Company to the State of Washington, in 1934, of 30,000 acres well stocked with second-growth Douglasfir. This land was bought for a dollar an acre, in bonds payable from income of the land itself. It is now the Capitol State Forest near Olympia. Its sale launched the creation of state forests from cutover and regrowing land.

As the years passed, Mark Reed



The "possibly profitable enterprise" of growing timber hoped for by George S. Long has become a reality. "Tree farms" dot the Northwest, while millions of forest seedlings are grown yearly at the Nisqually cooperative lumbermen's nursery

that "New Forests Are Growing Here." The company published a pamphlet, *Growing New Forests*, in 1928. With pictures of seed trees and seedlings and dense young forests were views of logging on land which the company itself had cut thirty-eight years before.

"For four decades," says this pamphlet, "the St. Paul and Tacoma Lumber Company has maintained the integrity of its service to the industry and to the public, building a widespread good will which will result in the cooperation it expects, in its efforts to perpetuate the great forests." These are the words of a man who stood up

ago follows a current which flowed strongly in many men—responsibility for the future of their own communities. The story of Mark Reed is the story of Shelton.

Mr. Reed first appears as junior partner with the timber kings of the southeastern Olympic area. With Sol Simpson, Thomas Bordeaux and A. H. Anderson, he built railroads and ran logging camps. Even in the speculative years of cheap timber, these men shared a common viewpoint toward the land. The companies they set up held their cutovers and merged them in organized protection units. One outgrowth of this

changed from master logger to community builder. His interest in land and its resources centered in a permanent community, supported by industries that would utilize everything the forests produce. Mr. Reed and his associates had built Shelton from a frontier settlement into an industrial town. They gave it outstanding community facilities—a hospital, high school, library and memorial building. More and more decisively the pattern became clear—behind the community a broad base of forest industry; behind the industry, a perpetual forest.

He brought a large pulp mill to Shelton
(Turn to page 193)

BARGAIN DAY ALONG THE CREEK

If You Want a Full Creel
During the Cold, Blustery
Opening Days of Trout
Season, Try Bait Fishing

By HARRY BOTSFORD

TROUT fishermen can be divided into two groups: those who greet the opening days of the season with glee and those who view them with disdain and coldness. In other words, those who habitually return with full creels and those who don't. And there you have the difference between bait and fly fishermen, as measured by results during the opening days of trout season.

The wet and dry fly purists invariably watch the approach of opening days with what might properly be called mixed feelings. The weather is cold as a rule, the wind raw and penetrating. Whipping a fly attached to a double-tapered line when the water is at a freezing temperature is almost a physical impossibility. Trout, at this time of the year, are generally indifferent to the most attractive of flies, regardless of how faultlessly they are presented. Later, when the waters warm and the trout grow lazy and particular, the fly represents a tasty and delicate morsel that will attract their attention and awakens a moribund appetite.

A fly on a blustery opening day has no more appeal to a trout than a dainty flake of pastry covered with whipped cream would have to a working man who craves a breakfast of oatmeal, pancakes, sausage and essential accessories.

These are the hard and bitter truths the fly purists have had to face on the advent of opening days in the past—and these truths have never been palatable. The cheerful boasting of the bait fishermen over their big catches, the chaffing and sandpapering in which they indulge at the expense of the purists rankles to put the matter mildly. The purist has been raised on a stern and inflexible creed. He believes, with sincerity and no end of eloquence, that a fly is the



March and April are generally too cold for flies—but ideal for bait fishing if you have technique, skill and a knowledge of trout habits

only proper, fitting and sporting way to take a trout.

He can, in fact, literally prove it. He relishes relating the most ancient of tall tales about a fly fisherman working in a heavy snow storm and taking trout of great size and notable fighting ability with every cast. Press him for particulars and he will be unable to produce evidence that convinces. After all, a purist must have some defense mechanism. He has been a martyr during opening days for so long that I wonder if he will be receptive when I tell him that this year he is about to emerge from his isolation and have some real fun.

All he has to do is lay aside his ancient prejudices, and if he is willing to compromise with what he is pleased to call his conscience it will be possible for

him to return home during the opening days with a full creel and a song in his heart. To achieve this desirable goal he will have to return to the first principles of fishing, the very ones he has damned so vehemently ever since he became a fly addict.

Before he completes his exploration he will be forced to admit that bait fishing is not the simple and primitive method he once assumed it to be. He's also going to admit that bait fishing gives him thrills and memorable trout, the equal of anything he ever encountered when he used a fly exclusively.

With foods being strictly rationed, the duty this year of the man with the rod is to bring back something that will make points last longer. This year, by the shades of I. Walton, it's patriotic to return with a full creel!

Let the purist approach the shift from flies to bait with an open, curious and studious mind and he will be in for a lot of pleasant surprises. If he will only follow certain simple directions and use the right equipment, he will tangle with bigger trout than he ever before encountered. He will also discover that these old lunkers are filled with fight and a perverse and interesting devilishness. They have just spent a long period in ice-cold water and are as fighting fit as Marine commandos. Too, they know just as many tricks!

The bait fisherman isn't always a gent with a heavy rod, a big hook and a strong line who heaves his fish back into the brush with main strength and awkwardness. Many play the game according to rules, which gives Brother Trout a fighting chance.

As to tools and technique, don't discard your favorite fly rod—that is, if you want real sport. You know its vir-

tues under stress, so stick with it. Also, and this is important, use the same reel as you use when you fish with a fly. Preserve completely the basic balance of your favorite rod.

You will change lines, of course, substituting a fine silk line of about ten pounds' test for your double tapered fly line. You will use a hook of the same size you use on your best flies. By all means, use a seven-foot

tapered leader, the same pliant bit of gut you have always used.

Now let's turn to the highly important matter of bait. During the early days of the season, you will find garden worms and small minnows most effective. If you decide to use garden hackle, don't wait until opening day to dig for them. Worms are not easy to find in frozen ground. Perhaps some farmer friend can be prevailed upon to secure a liberal supply for you. Get your worms at least two weeks before the season opens.

You must prepare, of course, a fitting and suitable residence for them—say, a box of sand and dry earth loosely mixed. Store this box in the basement and place the worms on top of the mixture. They will go to cover in a few hours. Remember, too, that worms have healthy appetites and must be fed—a small dab of cooked oatmeal is ideal. Supplement this with wet coffee grounds, and you have a diet entirely to their liking. Within a week or ten days they will undergo a process known to the bait fishing trade as "scouring." They take on weight and vigor.

The minnow, beyond doubt is the best and most effective bait for trout. But securing a flock of appropriate minnows, the small chaps from two to three inches long, is a task that calls for hardihood, patience and

physical ruggedness. You can secure an adequate supply in very small streams, using a minnow net, but you will probably be considerably dampened.

Minnows survive only in cold, running water. From this simple fact there may arise a slight domestic difficulty. Running water is easy to manage in the average American home. Simply put the stopper in the family laundry tub and fill it with water, arranging for the same amount to run into the drain as comes from the spigot. That's all!

But, let me warn you, unless your wife is charming and understanding, the chances are that she will take a very narrow view of such an arrangement. She will inform you that a part of the household routine is the business of Wilma or Greta doing the family wash in the laundry tub. She may even go so far as to hint that you should throw the minnows out. If violent by nature, she may utter sinister threats about their ultimate and untimely demise when you are not there to protect them.

Carry out a policy of appeasement. Save the lives of the minnows at any cost! Show her how to feed them with bread crumbs. If she has a kind heart, you can inform her that if she will go to the nearest pet store and secure a package of goldfish food, the minnows will flourish.

All of this sounds like a lot of approach shots, doesn't it? Well, that's the way it is with bait fishing. Results, however, justify all of the trouble.



The fly purist, above, will contend that worm fishing, at right, is primitive—it is, but it's productive





Bait fishing, in the author's estimation, is as sporting as taking trout with a fly. Not only does it require great patience and skill but, with minnows, larger trout are usually caught

There are a few other things that will demand your attention. If you plan to fish with minnows, you will need a very special type of equipment. It is easily made of fine copper wire, the sort experienced bait fishermen call "piano" wire. Take a five-inch length and make a tiny, secure loop at each end. To the leader end attach a small gold or brass spinner, one of the midgets of the spinner family.

Now for fishing methods. You reach your favorite stream in the chilly dawn of opening day and string up your rod, attaching the spinner and wire to your limber leader. Then you reach into the icy water of the bait pail and come up with a very indignant, slippery and protesting minnow. Gently force the wire into the mouth and out the vent. Then take a tiny double hook, formed like the letter U, and thread it into the open loop of the wire. And there you have it—the lively minnow is neatly cradled in the double hook and you are ready for adventure.

Strip off fifteen or twenty feet of line. Don't be too ambitious at first. Then, holding the line, swing the minnow out over likely looking water, releasing the line at the end of the swing, shooting the minnow as far from you as possible.

Cast quarteringly and upstream. This permits the current to do most of the work as you strip in line, and does not place a steady strain on your delicately balanced rod. In a few casts you will get the hang of it. An experienced bait fisherman can drop a minnow in the water fifty feet from him almost as gently as you can a fly. But that takes time and practice.

Keep a taut line. The current puts the spinner into action and it becomes a golden and inviting shadow that flashes elusively through the water. When Mr. Trout sees it, the chances are he will investigate. And when he does, he sees something more interesting and tasty than the flickering spinner, to wit, his favorite food, a nice, fat minnow.

The stage setting is perfect. Your trout is hungry and probably inclined to be careless, a trait he will lose as the season advances—if he survives. He sees the minnow and follows the first law of Nature. He opens his mouth, rushes in and gulps your minnow. You feel a husky tug, which is your signal to strike—and strike hard. Fish just as you would if fishing with a wet fly. Need I say more? Snap the wrist smartly and clear the decks for action.

Because the minnow is cradled in the

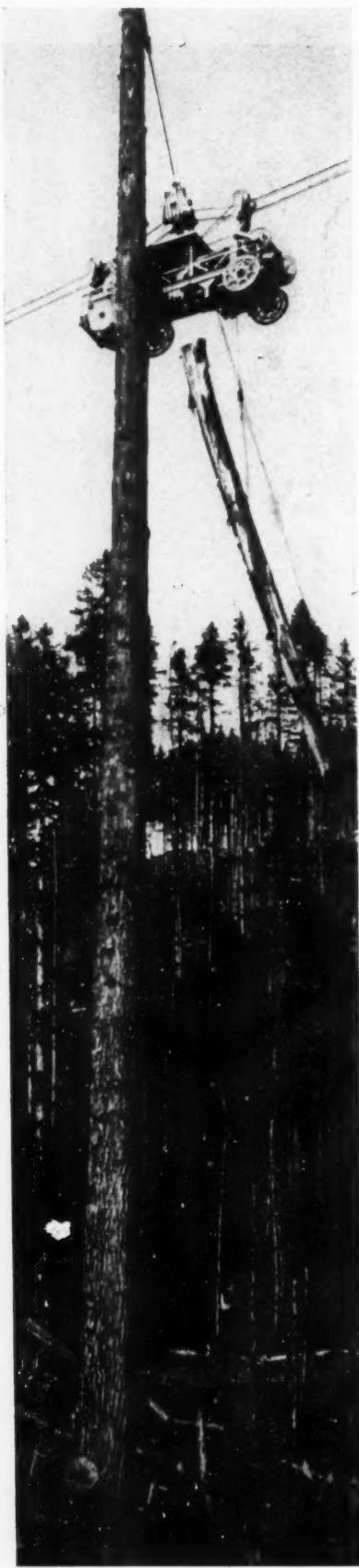
small double hook, you may expect a fine lip catch as you would with a fly, leaving the trout with his vigor at its height.

Your March or April trout is no tame or docile creature. You can expect a real battle. Seldom, indeed, will you snag an undersized trout when you use minnows. Often, you will tie into two- or three-pounders or better in streams where you never dreamed trout of that size existed. If you can land three out of five, your batting average will be excellent, and you will have had superlative sport.

With each cast your skill should improve. You will learn the trick of working your minnow-spinner combination around submerged rocks and water-soaked logs where the old hunkers wait for unsuspecting minnows to come along. You will not overlook the fast water or the holes at the foot of fast water—usually most productive.

As you go along you will develop a new respect and an open and unashamed admiration for bait fishing. It's every bit as sporting as taking trout on a fly—and it also requires patience and skill. You won't take a trout on every cast, but you will experience more strikes.

(Turn to page 194)



SKYHOOK

New Aerial Logging Device, Developed in Oregon, Opens Door to Better Management of Forests

By HAROLD OLSON

A NEW system of overhead power logging which may go far toward conserving forests is being tried out near Nollalla, Oregon. It is called the "skyhook." The first unit built has been installed in a mountainous Douglasfir setting, on lands of the Ostrander Railway and Timber Company, and is getting its initial workouts under the critical eye of foresters, logging engineers and operators.

Paul Bunyan, if he could witness the antics of this strange device, would likely stand in amazed disbelief. Suspended 160 feet above the ground by two cables, the skyhook, which resembles a tractor, roams the airways bringing timber down the mountainside from heretofore inaccessible ridges faster than it has ever before traveled down hill under control. In recent tests, using an operator, two chokermen and a chaser, the device brought a quarter of a million feet down a mountainside in twenty hours.

In logging methods now in common use in the West, the power plant is located on the ground. The skyhook's power for moving logs is up in the air, riding two massive skylines, or steel tramway cables. The operator is up there too. He and his power plant roll back and forth on these cables hauling logs. This by-passes some time honored principles of logging engineering.

Its builders say the skyhook will greatly aid good forest management. First, it makes selective logging easier in rough country. Second, it cuts logging costs in half, and this savings will make it economically feasible to bring out of the woods large quantities of inferior wood now left to burn or rot, because handling it by ordinary methods invites bankruptcy.

To salvage much of this inferior tim-

The tractor-like skyhook is designed to reach over hills and canyons and bring in the timber harvest cheaply and with minimum fire hazard

ber works benefits in two ways. Not only does it serve to stretch the old-growth timber supply and provide jobs, but it reduces fire hazard by removing part of the inflammable debris of logging and puts this material to useful purposes. It could go so far as to make all slash burning unnecessary and speed regeneration of the forests.

The principle of the skyhook is to reach out a mile or more from a log loading point, over hills and canyons, and bring in the timber harvest without having to build railway spurs or trucking roads, which cost up to \$10,000 a mile. It uses lighter equipment, is less expensive and operates with fewer men and with a great deal more safety than a "skidder" or "high line" outfit, while the amount of rigging required for spar trees is only a fraction of that required for donkey engines.

The device itself transports logging tractors through the air to wherever they are needed along the line for skidding purposes. The "cats," as they are called, yard the timber over to the aerial tramway and the skyhook brings it to the landing. It also can carry the loggers up rugged mountains to points of operation.

Riding high in the air on two two-inch steel cables, the skyhook's carriage mounts a powerful gas engine, and the operator, who rides with it, has at his disposal two individually operated cable drums for lifting logs. From his dizzy perch high above the logging works, the operator has the rigging crew in sight and can thereby be on guard against accidents. This is tough on signalmen—"whistle punks" in woods parlance—who stand to lose their jobs under this system, but it should reduce bodily hazards for chokermen, rigging slingers and hooktenders. They are on the firing line in the woods and their work is perilous.

There is neither a "main line" nor "haulback." The only moving lines are the two lifting cables on the skyhook's drums. This in itself is regarded as a

double-barreled advantage. The rigging crew cannot "get in the bight of the line" because there are no bights, and the pulls are upward. Logs are lifted, rather than dragged. The great Tillamook forest fire, which in one week of 1933 destroyed 12,000,000,000 feet of old-growth timber, was started by the friction of a turn of logs being dragged over a powder-dry windfall.

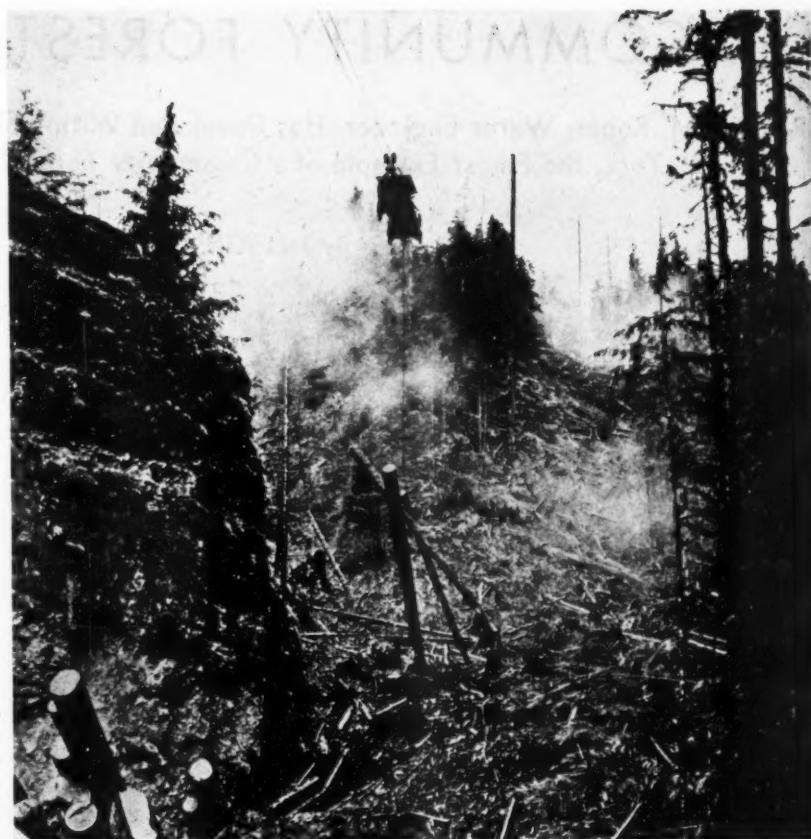
The two-inch tramway cables, suspended from spar trees, and fitted with guyed lines to keep them from swaying, are, of course, stationary. The power carriage rides them on four wheels and is propelled in either direction by means of two three-quarter-inch cables anchored at both ends of the tramway and passed through a system of power-driven sheaves on the vehicle. When the wheel sheaves are set in motion by the operator, they provide the traction, furnishing sufficient power to propel the skyhook up a seventy-eight percent grade before stalling. It can carry besides its own nine tons, a load of thirty tons up a fifty percent grade of its cableway.

The skyhook can rig its own cables, and pull itself up in the air as the cables are tightened on the drums. While the cables being used in the initial demonstration are only 2,000 feet long, special "open jacks" have been devised to allow the cables to be suspended from the spar trees and yet open for the skyhook to pass through them. Thus the machine can operate over a distance of a few feet or several miles, depending on the cable length necessary. Another interesting feature of the machine is that it can be used for loading—lifting the logs onto trucks or railroad cars.

The Pointer-Willamette Company, which developed the skyhook, says that with a crew of five—operator and four on the ground to set chokers and unhook at the landing—it can move 150,000 feet of logs a day over a 2,000-foot haul, on a thirty percent grade with operating costs amounting to \$100 daily or less. Using but one choker, the rig recently moved 91,000 feet in five hours. Two chokers are customary, and log "turns," or loads, of 5,000 feet have been demonstrated.

So versatile is the skyhook that its four lower traction sheaves can be fitted with tires and the machine be moved on the ground under its own power. Steering is accomplished by means of applying brakes on either side of the machine, much the same as a crawler type tractor is steered.

Weight of the skyhook is about nine tons. The builders do not contemplate mass production but plan to custom-build each unit for a special operation to solve individual transportation problems. Many improvements are planned, such as cutting the vehicle's weight to



In recent tests, the skyhook, with a crew of four, brought 250,000 feet of timber down a heretofore inaccessible mountainside in twenty hours

six tons and speeding up its rate of climb. They envision other uses for the skyhook, declaring that it can be of value in earth moving, digging, heavy construction work and all sorts of transportation over rivers and canyons.

The next model of the skyhook, it is explained, will look different than the present one and will have many refinements that will provide improved efficiency of operation. Furthermore, the builders say that a small skyhook attachment could be made for jeeps, which have four-wheel drive, and it could do most of the work for the farmer. The new skyhook probably will be built in three different sizes.

Inventor of the machine is Phil Grabiniski, a veteran highrigger of the Douglasfir country who for two years was champion highclimber of those parts. He says he had the idea six years before anything came of it, but hopes that now the first unit has been built, the "idea" will sprout.

"While we have a lot of things to learn about the skyhook," he said, "it can easily carry about 5,000 board feet per turn on the average."

Selection of the rather unique name of "skyhook" stems from a woods tradi-

tion. A skyhook has come to mean almost anything that helps loggers out of trouble. A hook is the symbol of power, a skyhook a superlative something that overcomes soul-searing difficulties.

Of course, the skyhook has been the logger's dream, a figment of fantasy, a hook as strong as Paul Bunyan which lifts logs straight up into the sky, over stumps, windfalls and similar obstacles on which the big round stuff sometimes "hangs up" when being skidded in to the landing. Many a rigging crew has battled stubborn hang-ups until the men are at their wits' end and beyond the limits of patience. In such instances the hooktender—boss of the rigging crew—would usually boil over in a sulphurous frenzy of exasperation, climb a big fir stump, slam his hat down and jump on it with his caulked boots and squawk to the hillsides about as follows:

"Holy old Mackinaw, old Saginaw, old Humptulips, old this, that and the other, please send us a skyhook for this blankety-blank hang-up."

Well, this skyhook may not be just what harassed hooktenders had in mind, but the builders gave it this name because it does, within certain limits, serve that exact purpose.

COMMUNITY FOREST BUILDER

Roswell M. Roper, Water Engineer, Has Developed Within Sight of the Skyscrapers of New York, the Finest Example of a Community Forest Outside of Europe

By NELSON C. BROWN

ROSWELL M. ROPER is water engineer and general manager for East Orange, New Jersey, and in his particular field has gained wide recognition for

outstanding accomplishments. On the East Orange Water Reserve, for instance, he constructed one of the three water spreading intake systems now in exist-

ence in this country. But to this and other monuments to his genius, Roswell Roper has added another—perhaps the finest example of a community forest outside of Europe.

Not more than twenty miles from the heart of the country's most densely populated area, within sight of the great skyscrapers of New York, this forestry-minded engineer has, within the short span of thirty-five years, transformed 2,200 acres of old fields, pastures and partially cutover woodlands into a flourishing forest of many uses and great productivity. Quietly, modestly and with an engineer's efficiency, he has planted trees, made cultural and improvement thinnings and installed a system of fire protection. Basically, of course, the forest was planned to protect the water supply of a city of 75,000 people—to prevent erosion and silting around the lakes and reservoirs. For Roswell Roper's first job is to furnish the citizens of East Orange with 5,500,000 gallons of water daily and keep 70,000,000 gallons in reserve.

But this New Jersey engineer has a personal interest in forestry and conservation, dating back to early life and observations of wasteful land use practices—erosion in the Mississippi Valley and lumbering waste in the pulpwood areas of Nova Scotia and elsewhere. Then, too, he once talked with Theodore Roosevelt about good forestry practices. So when in 1909 he set out to develop a watershed forest for the people of East Orange he was fully aware of the possibilities of growing continuous crops of timber and putting the forest on a revenue-producing or business basis while at the same time performing his major job of supplying water for the never-failing demands of the faucets and hydrants of the New Jersey city.

How well he has succeeded is a matter of record. Since 1922, when he first began marketing forest products from the water reserve, total receipts have exceeded \$80,000, or an average of \$3,636 a year. This adds up to about \$3 an acre, since but half of the reserve is in productive forest, the remainder being in lakes and reservoirs, building sites, roadways and streams, a game



Typical view of the East Orange forest after selective cutting. Tall, straight oaks were sold for ship timbers at a record price



refuge, a Boy Scout camp, a golf course and sawmill and lumber yard. This sounds like the reported income from a well-managed European community forest—and indeed it is.

The sale of cordwood—at \$20 a cord—has accounted for \$60,000 of total receipts, sawlogs \$8,500. In 1944, 250,000 board feet of oak timber sold for \$28 a thousand feet on the stump, the highest price for hardwood recorded in New Jersey up to that time. This is tribute to the manner in which Roswell Roper has managed this community forest. Indeed, so outstanding is his forestry program that a number of the country's professional foresters have



Watershed plantings on old fields total two million trees. Red pines planted in 1923, above, are today twenty feet high, below



Engineer Roswell Roper and, above, the 100-foot fire tower

visited the reserve for observation and study.

But cordwood and sawlogs do not tell the whole utilization story on the East Orange Water Reserve. The sale of piling, poles and posts has brought in \$3,500. Christmas trees and greens, the latter the result of trimming the lower branches of thousands of evergreens each year, contributed \$2,500. Ornamental trees, sold at from fifty cents to a dollar a foot, depending on the species, have brought in \$4,000. Two thousand dollars worth of natural growth oak, up to two inches in diameter, have been sold. There are other miscellaneous items.

Since 1941 the forest has been doing its full share in helping to win the war,

contributing vitally needed ship timbers from its sturdy oaks, furnace poles for the copper smelters in the Hudson River Bay region and cordwood to aid in the fuel shortage.

The original cost of land and its subsequent management, including fire protection, thinning and reforestation, are chargeable to the cost of protecting the sanitary and continuous flow of water for the people of East Orange. This would have been done, as it is being done on other watershed forests, whether or not there was any income from the sale of forest products. So the timber revenues are net income—that is, they may be classified as "unexpected income."

Just thirty-five years from the day

Roswell Roper took charge of the reserve, it was the writer's privilege to accompany him on a trip through the forest. Rabbits, squirrels and pheasant scurried about the woodland trails; deer poked their curious eyes around distant trees; and a blue heron settled on one of the lakes. As we walked, Mr. Roper reviewed some of the interesting history of the forest—how, as a young engineer, he first looked over the land purchased to protect the water supply of East Orange. Originally, he said, the residents of that city depended upon local wells and springs for their water. Then they organized a private water company to supply their needs, finally going over to municipal ownership with plans to drill wells along Whiteoak Ridge near the suburban villages of Short Hills and Milburn. At first a few farms were purchased and seventy-five acres were considered sufficient. Then came a gradual expansion with tree planting—2,000,000 altogether—mostly white pine, Scotch pine and Norway spruce.

But thirty-five years ago, when Mr. Roper first looked over the land, he saw little but old fields, worn out farms and cutover woodlots—a scrubby, ordinary looking area. What to do? Should he leave it alone and let nature take its course? Could he improve on nature by attempting to grow more and better timber, while at the same time adequately protect the water supply by preventing silting and erosion? What about the wildlife in the woods? These were but a few of the questions that ran through his mind when he first surveyed the area.

The answers are found today in every nook and corner of this outstanding example of how a community forest may serve a city with multiple uses at their best — watershed protection, timber crops, recreation, wildlife management and beauty. Not only do the people of East Orange enjoy an adequate, sanitary and inexpensive supply of water, a source of timber and fuelwood close at hand, a Boy Scout camp and other recreational facilities, and a véritable wildlife refuge, but an assured future in all of these essentials to the American way of life.

This is all the more remarkable when it is considered that from a high point near this forest one may look down upon 20,000,000 people, or approximately one-seventh of the entire population of the United States. On a clear day, from this high point, the range of view includes the entire metropolitan district of New York City, many large communities in northern New Jersey, such as Newark, Paterson, Passaic, Elizabeth and the Oranges, far out on Long Island, southern Connecticut and some of

the populous centers of New York's Westchester County.

The area lies just beyond the second range of the Orange Mountains and is traversed by a number of public highways. It is therefore subject to damage from forest fires started by the public. Because of this, Mr. Roper erected a 100-foot fire lookout tower, known locally as "The Sentinel." The observer can throw a switch which starts a siren at headquarters a mile away, where fire fighting equipment is maintained. This siren can be heard for a distance of about two miles and, when blown, every employee drops whatever he happens to be doing and rushes to the fire or mans the equipment. Mr. Roper estimates that the fire tower has more than paid for its cost by the quick suppression of many ground fires started by passing motorists or hikers. This reminds one of many European communities which have become "fire conscious" and where the people are accustomed to dropping their work to suppress any fires that may start. Thus Mr. Roper has not only his employees, but the local residents conscious of the ever present danger of forest fires.

Timber in the forest is cut according to a plan of selective logging—that is, the larger, older, and more mature trees are removed and the younger and smaller ones left to grow in the openings. The contractors who purchase and cut the timber are experienced and prefer to operate according to approved forestry practices. These men are in the sawmill business and unless timber continues growing in northern New Jersey they will be out of business.

Originally, the woodlands consisted of a large variety of tree species—oak, maple, birch, basswood, hemlock, ash, cherry, beech and some of the minor species. The intent of forest management has been to encourage the growth of oak, as it produces the most valuable timber. Most of the oak being sold is red, black, white and swamp white. This is of excellent quality for ship building purposes, going largely into PT boats, destroyer escorts and other Navy craft.

After the trees have been felled, they are cut into long lengths and loaded by tractor and cable onto large trucks for transportation to the sawmill, where they are cut to the sizes needed for their specific use. When there is not a good market for furnace poles, many of the tops are cut into firewood for which an excellent market exists in East Orange, only ten miles away.

The nearness of the forest to New York City with its many shipyards and other wood-using industries works, of course, to Mr. Roper's advantage. As mentioned, he sold during 1943, 250,000 board feet of oak for conversion into

timbers for one of the metropolitan shipyards, at a stumpage price \$28 a thousand board feet. The branchy tops were cut up for cordwood, and logs not suitable for the sawmill were sold by the ton as furnace poles for use in the copper smelters in the district.

Next year Mr. Roper plans to sell 200,000 board feet at \$24 to \$28 a thousand. This is an exceptionally attractive stumpage price even for shipbuilding oak. The trees are generally tall and straight and of good size and quality, the results of many thinning operations during the past thirty years or more.

Roswell Roper is not a forester by vocation, but very much one by avocation. He is a former Army engineer, attended Lehigh University, and is a builder by nature. His hobbies include photography and guns—but these are secondary to his major interest of forestry, which has been lifelong. One of his three sons, Roswell M. Roper, Jr., "caught the picture when he was a youngster" and as a result became a professional forester. He is now attached to the Allegheny Forest Experiment Station. "Perhaps," Mr. Roper will tell you, "the fact that for sixteen years we have had a log cabin in the Stokes State Forest in northern New Jersey, which we built ourselves, may have had something to do with it." Perhaps—but unquestionably a greater influence was the deep interest in forestry of Roswell M. Roper, Sr.

This interest is evident everywhere in the East Orange Water Reserve—in the 2,000,000 trees, some of them now more than twenty feet high, that he planted. Around their roots has already developed a mulch of needles and twigs which are, in many cases, several inches deep, absorbing the rainwater which would run off if the ground had been left in its original barren condition. It is evident in the well managed oak forest, in the products it has produced; in \$80,000 in revenue these products have contributed to the city; in roads and paths that are planned for the beautifully wooded areas for the future enjoyment of the people; in the deer herd and other wildlife of the reserve.

Roswell Roper has made a great contribution in demonstrating the success, financial and otherwise, of a typical watershed type of community forest. Indeed, East Orange, through Mr. Roper, has pointed the way for engineers or managers of forested watershed properties all over the country to "go thou and do likewise." Also, almost any city or village might emulate to its advantage this pioneer adventure in community forests conceived some thirty-five years ago and now coming to its fruition.

GI LOGGERS IN BURMA

By SERGEANT JOHN R. McDOWELL

"C. B. I. Roundup" Field Correspondent

Sergeant McDowell's graphic story of the herculean feats of the Army forestry units to keep the Burma drive supplied with lumber from native timber is of such widespread interest that it is reproduced here in full. It appeared originally in the C. B. I. Roundup, service newspaper of the troops on the China-Burma-India front.—Editor.

BURMA—Today, the spirit of Paul Bunyan rides high on the tempestuous monsoon wind as it sweeps up from the southeast across the green desolation that is North Burma. And his booming, thunder-clap laughter is re-echoed by his mortal henchmen who have defied the elements to set up a vast timber industry in the matted, primitive jungle.

Captain E. V. Roberts is not in character with the popular conception of a timber king. Quiet and unassuming, the captain is a product of the United States Forest Service, with which he served as regional survey director in the Appalachian Forest Preserve Experimental Station. But that was in those far-off civilian days. Today, as commanding officer of the first GI forestry outfit in the Far East, he has exploited the vast virgin timber resources of Assam and northern Burma to such an extent that lumber is now the Army's No. 1 industry here.

When I first met Roberts, he was a mighty weary man. His two mills in Burma's Hukawng Valley had just completed what was probably the largest emergency military order for lumber ever given a GI forestry outfit: a million board feet in thirty days.

The order was placed during the height of the summer monsoon. And it was a rush job. Engineers decided to

build a causeway across a flooded area.

The construction of the causeway meant lumber—lots of it. Pilings, cross beams, supports, flooring, railing—two miles of lumber which eventually added up to 1,000,000 board feet. Translated into everyday terms, 15,000 board feet of lumber is needed in the construction of the average five-room frame house. Thus, in a month's time, two GI sawmills, supplied by GI logging crews, produced enough lumber to build sixty-seven five-room frame houses.

For thirty days, the men worked ten-

hour days, seven days a week, to fill the order. The two mills, equipped with sixty-inch circular saws and ninety horsepower Allis Chalmers edgers, turned out as much as 43,000 board feet of lumber a day during that hectic month. (According to specifications and performance guarantees, the Corinth Mill used by the Army has a top production level of 12,000 board feet a day.)

In discussing his outfit's record output, Roberts says: "There's only one factor which made it possible for us to fill that order. That is experience. Practically every man in my outfit is a veter-

an logger or mill man. As civilians, they were the timber-fallers, the gyppos (independents who fall timber at contract for so much per thousand board feet), the bull-bucks (timber bosses), the choker-setters, the knot-bumpers, the cat-skinners, the sawdust-eaters of America's timber empire. They worked the camps from Maine to the big trees of the Far West. And in the Army they're carrying on their skills for Uncle Sam. They're a great bunch of men."

Later, I learned firsthand what the captain meant. We drove up the Hukawng from mill headquarters about six miles to the logging camp. Here, in a clearing beside the Ledo Road, a GI was operating a crude derrick mechanism which was mounted on the body of a dilapidated truck. The derrick consisted of a long pole, controlled by a network of cables, and a main line on the end of which was large steel tongs which bit into huge logs which were high in the air and loaded on trucks. To my inexperienced eye, it resembled a gin pole on wheels.

The captain pointed to the machine. "That," he said, "is the pride and joy of the outfit. It's a home-made jammer, designed and built by two of our men."

A jammer, the captain explained, is a piece of equipment known primarily to far Western loggers. Its chief value is its maneuverability and performance record in lifting heavy weights. It is used where logs have to be hauled to the mill by trucks and where the timber is big.

The Army T. O. for a forestry unit calls for the use of stiff legs in the loading of logs. Roberts' men, however, (Turn to page 195)



"Deep in the jungle we found the loggers at work with power saws"



One of the
Diamond Lake
cabins used by
the veterans

REBUILDING OUR JUNGLE FIGHTERS

Oregon's Forests Play a Big Part in the Reconditioning of Marine Veterans

By CAPTAIN DONALD N. CARPENTER

MARINE veterans from the Pacific theatre of war—the men who stormed the beaches of Guadalcanal, Tarawa and Saipan—are being rehabilitated in the mountainous forests of southern Oregon. At Klamath Falls, men invalided with malaria and filariasis are being restored to physical and psychological endurance to permit them to assume duty again. This is achieved through a carefully planned program of medical treatment, military training and outdoor recreation. In this last phase, the forests, streams and mountains in the foothills of the Cascade Range are playing an important part.

Located in a mountain valley 5,000 feet above sea level, and within sight of Mt. Shasta's snow-capped peak, the \$4,000,000 Klamath Falls Marine barracks is well on its way to becoming one of the military and medical centers

in the country. The climate in this valley is cool and dry, and there is plenty of sunshine—ideal for the reconditioning of men. And close by is some of the best fishing and hunting country in the Northwest.

Outdoor recreation and military training go hand in hand at Klamath Falls since they provide planned coordination of mental activity to accompany medical treatment. The training includes military classes, drills, parades and guard duty, with a generous amount of liberty for planned recreation such as fishing and hunting, hiking, camping, boating and swimming. Added to the benefits of these activities is, of course, the healing power of the scenic gems of Oregon's forested mountains—Crater Lake, for example.

In small groups of from eight to ten men each, and accompanied by woods-



So you're a Devil dog! A veteran gets acquainted with a chipmunk

wise group leaders, the veterans participate in some form of outdoor life throughout the year. During the spring and summer, the main attraction is centered around the lakes and streams of the forest where they may fish and enjoy water sports. In the fall, a variety of hunting is provided. Winter and snow find the Leathernecks skiing, snow-shoeing and bob-sledding. And, for at least eight months of the year, there is hiking and horseback riding. A stable of thirty-six horses, ex-cavalry mounts, is maintained at the barracks for the veterans.

At Lake of the Woods and at Diamond Lake, cabins have been donated to the Marine veterans, and during the summer months twelve men occupy each cabin at all times. Both locations are secluded and provide magnificent scenery for the men, as well as excellent fishing. The best angling is at Diamond Lake where rainbow trout averaging from three to five pounds each can be taken on wet or dry flies. A number of parties have visited famous Rogue River and its tributaries, to camp on pine needles beneath huge sugar pines and fish in fast water or hike through the surrounding forest.

This is the type of trip the men enjoy most. At dusk, around the campfire, after a full day on trail or stream, they respond as all red-blooded men respond to dark skillets of crisp, delicious trout and the inevitable swapping of stories in the glow of their fire. Later, sleeping bags and blanket rolls are laid out and sleep comes easily as the stars shine down through the spires of great pines. On their first experience, city-reared veterans just lie back in silence and drink in the beauty of the setting. No medicine can equal this for a man sick of war.



Informal hikes in the mile-high Cascade foothills, where the air is cool and dry, do much to recondition these war-worn veterans



Far removed from the battlefield is this scene at Lake of the Woods. Here, a group of Marines relax and enjoy an open fireplace with girls from the nearby town of Medford

During the fall hunting season, the Lava Beds National Monument camp near Tule Lake, California, is turned over to the Marines. Also, they are permitted to buy courtesy resident hunting licenses. As a rule their luck is good. Some big bucks along with a good number of ducks, geese and pheasants have been bagged by the Leatherneck nimrods.

Strange as it may seem, however, these veterans of Jap hunting at times suffer, like most any other sportsman, from "buck-fever." One Marine, deer hunting on the Modoc National Forest in northern California, trembled all over as he brought a big buck deer into his gun sights and was unable to pull the trigger. A fellow hunter, realizing the situation, shouted: "It's a Jap!—Let him have it!" Instantly the Marine fired and dropped his game.

Nor is this perfectly normal reaction confined to hunting. Men who faced the Japs on Tarawa and Saipan have been routed by a food-seeking bear. One such incident occurred at the Diamond Lake camp when the writer was present. Shortly after camp was established, a 600-pound black bear began raiding the garbage can and the Marines determined to put a stop to his noisy procedure. One night they made plans for a hot reception, but when the bear failed to appear they gave up in disgust and

went to bed. When all was quiet, as might be expected, the bear returned and began his usual rummaging for food.

Since there were no guns in camp, the men armed themselves with brooms, mops and fuelwood and formed a line of attack. But it was a slightly wavering line, for few among them had ever seen a bear except in a zoo. Finally, after much uncertainty and because only action of some nature could save the situation, they rushed out the door in a noisy body and into the clearing. Naturally, and without doubt to the relief of the Leathernecks, the bear quickly vanished—never to be heard from again. Needless to



Marine Major Joe Foss, Medal of Honor Ace, calling ducks



Good occupational therapy for hospitalized veterans is fly-fishing, here being demonstrated by the author



Fishing at Diamond Lake where rainbow trout average from three to five pounds—with ten and fifteen pounders around

say, this group of hardened fighters absorbed a lot of kidding from that night on.

The citizens of Oregon have taken the Marines literally into their families and many invitations to private homes or to fish and hunt have been received at the barracks. If the men invited can be spared, an official order is given showing

the time, place and extent of the invitation. Such recreation, it has been found, becomes a valuable occupational therapy.

The Klamath Indians on the nearby Klamath Indian Reservation, gave fishing and hunting privileges to the veterans and even guided them over their 200-square mile sanctuary. Fishing in the Williamson River was without equal and many fine rainbows, weighing from three to eight pounds, were caught by the Marine flycasters using both wet and dry flies. Other white men are barred from fishing this reservation stream.

Public-spirited citizens also have supplied the Klamath Falls veterans with fishing tackle. Complete equipment for more than seventy men has been donated. This is assigned to the post recreation office and issued to the anglers when requested. A Marine handyman has set up a "tackle room" to keep the gear in top condition. Tackle contributions have been made not only from the citizens of Oregon but from those of Washington, California and Idaho.

Shotguns for hunting parties are regular Quartermaster issue, the shells being donated by the Marine Corps League which raised a special fund for this purpose. Also, a good supply of shells is placed on rationed sale at the post exchange. Deer hunters use a regular issue Springfield rifle with ammunitions available at the post exchange.

The training programs at the barracks are based on the idea that a man is better off if he can assume some activity and responsibility. Practically everyone at Klamath Falls, therefore, does something. Regular military routine is followed, and while it is not as heavy as combat conditioning, it keeps the men on their toes. The veterans are assigned to duties compatible to their physical condition. One of these duties is a mounted fire patrol known as the "Horse Marines." The men of this patrol, a great many of them former cow-punchers, do not wear the colorful uniforms of their famous predecessors in China. They go about their duties of patrolling the forests dressed in dun colored overalls and khaki. Nevertheless, the "Horse Marines" have distinguished themselves on a number of occasions by aiding Forest Service men in fighting fires in the timber country of southern Oregon.

Indeed, when the fire situation became critical last year, the Marines at Klamath Falls—as many as a thousand at one time—fought side by side with foresters and local citizens in bringing large fires under control. On one occasion they turned out in force to fight a fire that threatened their own barracks.

During an emergency following the



Building fire breaks in the forest keeps the veterans outdoors, provides exercise. Last summer, during a critical period, hundreds were on active fire duty

opening of the deer season in California, the veterans were asked to take over for a short period regular fire protection work in the Modoc National Forest. Two groups of fifty men each were trucked to forest camps for a five-day watch. This emergency, it seems, was brought about by the use of government tracer ammunition by civilian deer hunters in the bone-dry forest, plus the usual hunter smoking hazard. Foresters praised the Leathernecks for their efficient handling of the situation. Recreation on this detail was simple. The men played baseball and other games when on liberty at the camps, but a large number found relaxation in trapping and taming chipmunks, at which they became amazingly adept.

At the barracks the veterans play football, baseball, bowl—the usual run of games and sports cherished by Americans. Many have become camera enthusiasts and find a wealth of subject matter in the surrounding country. When war restrictions on photograph material are released, this field of inter-

est will be encouraged. Target practice is popular at Klamath Falls and the completion of a \$90,000 rifle range will permit expansion of this activity—including the training of rifle teams to engage in competition.

An unusual feature of the barracks program is educational opportunities offered the veterans. A large group is enrolled in the Klamath Falls High School, preparing for the time they will return to civil life. Classes also are held at the barracks.

There can be no doubt but that the thousands of men who have and will be treated at Klamath Falls will acquire a love for the woods and outdoor life. Many are experiencing fishing, hunting and camping for the first time—and to say they like it is an understatement. These young men will expect much in the years to come, and Americans owe them the right to enjoy their outdoor heritage. This means that an active conservation front must be maintained that forests and streams shall not be spoiled.

Subterranean Wonderland

Grandeur Beneath the Forest Floor of Lookout Mountain

By DOROTHY FERRELL HAYDEN

six story building. There are both upper and lower caverns. During the Civil War the lower caves were used by the Confederates both as a camp and as a retreat. On the wall of one of them is the signature of Andrew Jackson, followed by the date 1833. It is in keeping with the character of the old fire-eater that he personally investigated the caverns at the age of sixty-six while he was President of the United States.

The spectacular upper level is a more recent discovery. In 1929, when the

Above, giant stalactites. At right, the "Mill Pond" reflects a colorful variety of cave onyx formations overhead

WHAT lies beneath the forest?

When you are tramping along woodland trails or driving over a road which climbs a mountain's tree-clad shoulder, do you ever wonder what may lie a hundred feet beneath the surface of the earth? Five hundred? Or a thousand?

In addition to the rock substratum underlying the relatively shallow soil, there are underground rivers and springs, caverns and fissures. Many of these are known; far more will be gradually discovered and explored.

One of the most fascinating places to descend into this mysterious subterranean world is at Lookout Mountain which stands like a weathered sentinel overlooking the city of Chattanooga, Tennessee. Here within the mountain's very

heart are caverns known to men for hundreds of years; caves on different levels; natural passageways, high, narrow and tortuous—mere clefts in the massive rocks which carry the weight of the mountain overhead.

From the point on Lookout Mountain at which the caves are entered, a shaft descends 260 feet, or equivalent to the height of a twenty-



shaft was being sunk to the lower caverns, a crevice appeared. This narrow crack in the dark and unknown earth was entered by an explorer who worked his way, sometimes on hands and knees, through to the magnificent rock chamber later named "King Solomon's Temple."

Fortunately, this natural phenomenon has been opened to the public. Excellent judgment was exercised in the leveling of foot paths and the installation of occasional hand rails as a matter of convenience and safety, while leaving the original beauty of the formations untouched. The temperature in the caverns is a constant fifty-eight degrees; even in winter, overcoats are not needed.

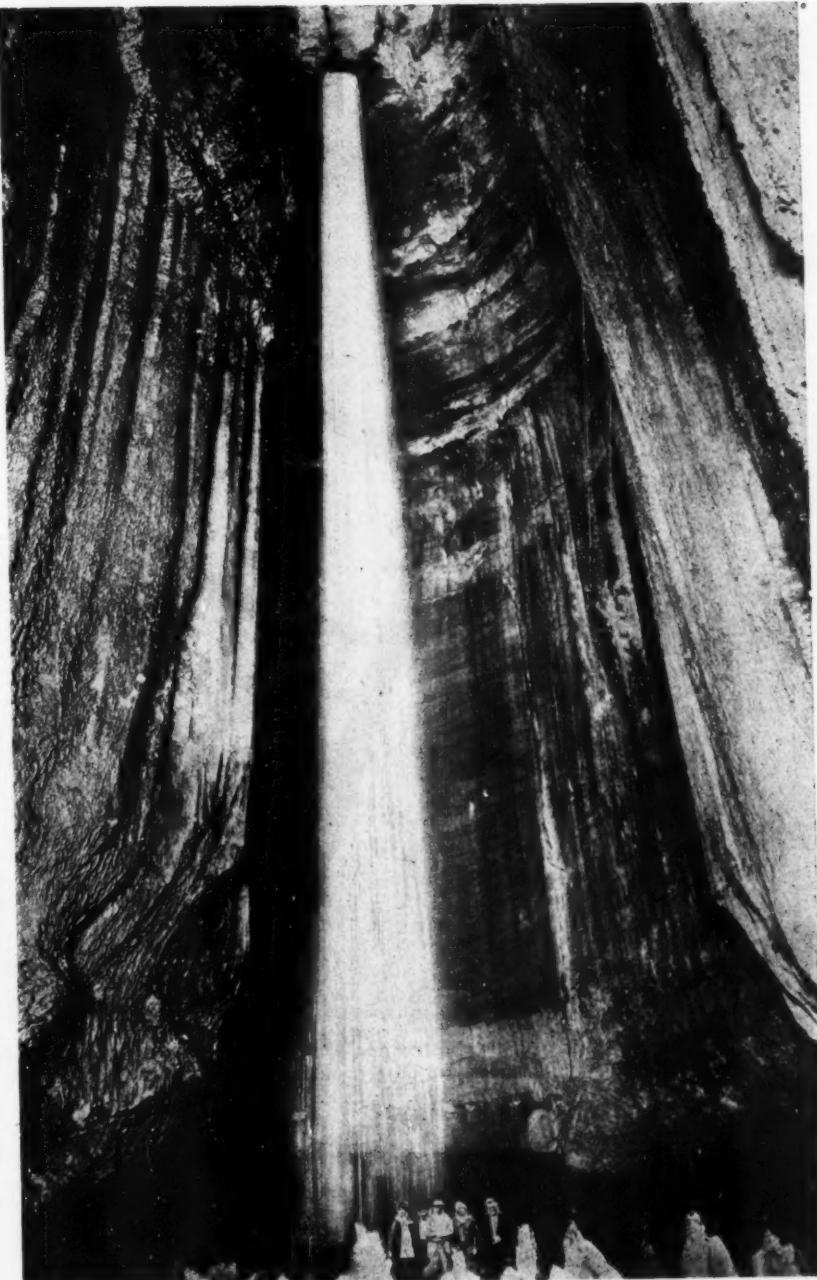
Visiting the caves recently, our guide informed us that much of the rock is Mississippi blue limestone, which possesses the distinction of being the hardest type of rock known, with the exception of granite. Slowly dripping water is ever present, and the stalactite and stalagmite formations are still growing at a rate of roughly one inch in from 100 to 200 years. This considerable variation depends upon the volume of water seeping through the rocks to leave its calcareous residue. As the stalactites "grow" from the ceiling down like so many huge icicles in stone, water slowly drips over the formation, leaving in its passage an imperceptible mineral residue. It is these deposits which, in the fullness of time, develop into beautiful and impressive cave onyx formations.

In the same manner the stalagmites rising from the floor are created; seeping water evaporates, but its mineral content remains. Gradually, as this deposit increases, stalagmites develop, thicken and increase in size until sometimes they join with a descending stalactite to form a "column," or stalacto stalagmite. The stalactites and stalagmites will not cease their growth until water disappears from the cave, and it becomes entirely dry.

All this may take millions of years, throwing into somewhat comic relief man's puny concept of Time!

The Lookout Mountain cavern formations exhibit a considerable color range. This is due to the different types of minerals present in the rocks through which the water seeps. However, there is only one rather small stalactite of the blood red variety of onyx. It is a common joke among cave visitors that they will come back when it is "grown up." All cave onyx is translucent. The light of an ordinary house electric bulb will shine through a formation twelve inches thick at its base.

It is an impressive experience to walk the half mile through the cavern from where the shaft is sunk to "King Solomon's Temple." The passageway, the



"King Solomon's Temple" is a majestic rock chamber 1,120 feet below the surface of Lookout Mountain—with "Ruby Falls" tumbling 145 feet from an unknown source

natural rock fissure, is perhaps six to ten feet wide at its base, tapering off into mysterious, flickering shadows high overhead. Because the natural entrance to the cave was sealed some years ago by the construction of a railroad tunnel, the shaft is now the only means of entry. For this reason, there are no bats dwelling in the cavern. A few blind salamanders are its only living inhabitants.

There is literally infinite variety to the

onyx formations which line both sides of the winding passageway. As we rounded a bend, it required little play of the imagination to behold an onyx stalagmite "Santa Claus," complete with pot belly, beard and tasseled fur cap; a nearby stalactite growth is humorously designated as "Joe E. Brown's False Teeth." There is a natural onyx group of "Joseph and Mary"; and a breath-taking

(Turn to page 199)

KING of the BIG STICKS



Wood piling is needed for construction work around harbors, on docks, seawalls, breakwaters and jetties. Last year, Whipple, shown here on a double-car load destined for the Pacific area, shipped 100,000 piles

While Delivering Wood Piling in Great Quantities to the War Fronts of the World, Dynamic Ernie Whipple Is Growing Trees for the Future

By ARTHUR W. PRIAULX

OUT in the tiny logging town of Drain, Oregon — population 597 — there's a sixty-year-old, one-armed business man who has a large scale ambition. He wants to have a hand in rebuilding Tokyo "after our boys knock it down," and the chances are he will realize at least part of his ambitious postwar plan.

This smalltown business man with the powerfully big ideas is a character right out of magazine fiction. To most of Oregon and Washington, he is known as

"Mr. Scattergood Baines." In real life, he is dynamic, truculent, grinning Ernie Whipple, king of the piling industry, a soft-hearted man with a dollar but one of the topnotch catch-as-catch-can swearers in a country full of fork-tongued, paint-blistering lumberjacks.

Ernie is a contradictory personality, like the original Scattergood of Clarence Kelland. Rarely turning down a request for aid, he varies between bawling profuse, direct and often profane instruc-

tions to his sweating crew of loggers and helping them out of their financial and personal troubles, frequently to the accompaniment of self-censuring moans about being a sucker for a hard luck story.

These activities are Ernie's way of enjoying himself. They take up only a fraction of his time, the amount a less unusual man might devote to gardening or stamp collecting. Hardworking Ernie's endless fund of energy—and the

greater part of what his men swear is a twenty-six hour day—are devoted to getting out the wood piling Army, Navy and industrial procurement men constantly cry for.

It's no small task. The big sticks are much in demand. At Naples, at Cherbourg, in India and in the South Pacific—wherever there are Army or Navy facilities—wood piles delivered on time by Ernie are playing a big part in the war effort, like the cantankerous old man himself.

In the war, piling is needed for construction work around harbors, on sea-walls, docks, breakwaters and jetties. When harbors like Naples and Cherbourg are rebuilt, piling is invaluable. It may be creosoted to make it impervious to insects and decay, but driven into the ground, its life is prolonged. Much piling comes from the West Coast, where the trees grow straight and strong and long. Douglasfirs, quick-growing and with little taper, make ideal poles for piling. They grow thickly in western Washington and Oregon, and in the struggle for sunlight, rear tall and slim to the sky.

Whipple's piling loggers are really pre-logging the young forests, removing

trees from stands too overcrowded to support them. Only a small percentage of such trees normally survive to reach maturity, the constant battle for existence killing off many. Taking poles for piling from such stands, Ernie points out, benefits the remaining trees by increasing their fund of sun and soil nourishment.

Small piling operators, from two-man shows to crews of ten or more, supply twenty-one loading-out yards for Whipple. He also buys piling as far north as British Columbia, and down in northern California. Throughout this area, Ernie's men are at work felling trees, barking them, hauling the long poles on specially-built trucks and trailers to sidings where loading cranes powered by small hoists, or even by horse-teams, load the vital piling for shipment.

His firm—Whipple and Kirk—last year shipped more than 100,000 piles. Some were short ones, twenty feet long. More were slim, straight Douglasfirs, stripped of their bark, 150 feet long and as symmetrical as corn on the cob.

Ernie's company required 2,500 freight cars to carry their shipments to concentration yards along both coasts, near embarkation ports. The long ones,

Ernie's special pride, must be shipped in four freight cars. They are loaded as carefully as so many gigantic sticks of dynamite, to insure delivery unbroken.

In the piling business, a man needs Ernie Whipple's temperament and toughness. It is one of the most wearing, nerve-racking jobs in the world, according to horny-handed lumberjacks who themselves have no sinecure. The source of supply is so varied, from small farm woodlots to thinnings on large industrial holdings, that a man has to have his nose in most every logging operation in three or four states to know where to get the trees he needs.

Ernie is one of the few men who do know the field thoroughly. Some of his foremen insist that their one-armed boss can look at a small cross-section of piling, taken any place within ten feet of the top of a pole, and tell what size pole the cross-section came from, how big it is at the butt and how tall a tree it was cut from. And when he buys piling as it stands in a forest, he knows exactly how many poles he will get from the stand of timber. He personally inspects them all, and is seldom wrong in his estimates, whether the stand covers ten acres or a hundred.



Douglasfir, quick-growing and with little taper, makes ideal poles for piling. Here Whipple (at left) exhibits some of his "long ones"—piling 125 feet or more in length, now especially desired by the Navy

He knows his men, too. He has more than 300 employees scattered over a dozen counties, and he can call them all by their first names. Practically all are skilled woodsmen, but Ernie can still show most of them how to do their work a little better.

When a red-mackinawed, stumpy figure comes boiling out of a car on one of the Whipple jobs, the crew immediately steps up its already fast pace. The red plaid coat is a familiar sight the length and breadth of the Pacific Northwest, and so is the trail of stirred-up dust its owner generally leaves in his wake. More often than not, the old man is hatless as he swarms all over one of his woods jobs, and his GI-cut, stand-up steel gray hair is as much of a landmark in the forests as the tremendous Douglasfirs that tower over but cannot dwarf him.

Nothing escapes Ernie on these flying inspection trips. He skitters around like a tick on a hot plate. One minute he's up on a partly loaded car of piling showing a top loader how to fasten his load, and in the next breath he may be down with the foreman, pointing out flaws in the operating efficiency of the yard.

Ernie is a walking dictionary of piling facts. He has Scattergood's impatience with details and the red-tape brand of routine. Many of the business records travel with him at all times, under his gray thatch: grades, markets and production figures. Amazingly, he never forgets an order, once he has scribbled it on a scrap of paper, although he may never look at it again. He seldom refers to the multi-copied formal orders government regulations call for; his efficient two-girl office staff takes care of such details without bothering him.

In forty-five years, that have seen him move up from greasing skids behind a bull team in a logging camp to his present rank as No. 1 piling operator in the world, Ernie has been off the job only twice. He was out of action for a few months long ago, when a huge cut-off saw broke through its guard at Leona Mills, where he was sawmill foreman, ripped off his left arm at the elbow and nearly severed his hip. Today, Ernie handles a peavey with any man in the business, despite the stub he has for a left arm. Typically, he put his convalescent period to good use for some serious thinking, and came back from inactivity to go into business for himself.

Then, in 1940, at an age when he might have been expected to be a little brittle, Ernie tangled with a fully loaded gravel truck, and came off second best. The rear wheels ran over the old man's middle, crushing his pelvis. That stopped the piling king for almost a year, but

today, as Ernie nimbly catwalks a car-load of piling, or tramps for hours through heavily wooded country, no trace of the injury is apparent.

The whole town of Drain revolves around the personality of this unique throwback to a rougher era. He and his son Jim operate a sawmill in Drain, and hold almost enough timber in the north Douglas County region to permit sustained yield logging. In other words, the harvest of timber from their land will just about furnish their sawmill with a steady supply of sawlogs perpetually, if fire is kept out of the woods.

Ernie's chief hate is the piling operator—happily becoming uncommon these days—who devastates a stand of timber in order to get immediate returns in piling. Nor does he like to see a small timberland owner cut his timber clear to get land for pasture. Ernie maintains that some lands are best suited for growing timber and will never make good farm or pasture land. He believes in studying land to determine the crop it is best fitted for—timber, grass, or farm crops.

Age sixty means nothing to Ernie. He is working out now a long-range forestry program for his lands, and plans on being around to see another twenty years of managed harvesting on his holdings. For years he has worked with small land owners, especially farmers with woodlots, showing them how to take crop after crop of piling and other forest products from their land and still have timber left to grow more crops.

"Timber is our only renewable natural resource," Ernie says insistently. "All you got to do is keep fire out, use a little horse sense when you cut the crop, and Mother Nature will team up with rain and sunlight to grow more trees. It's so simple, even I can understand it."

Piling and forestry are his main interests, but he has a finger in most everything that is going on around his Oregon bailiwick. In the eastern part of the state, he owns a large cattle ranch, and in his home county he operates several small cattle ranches and "a sheep ranch or two." These additional interests he passes off as "just something to keep busy with."

It has been said of Whipple that he is "in partnership with the whole county." Slightly exaggerated, of course, the statement does have some basis in fact. He probably has more holdings in more different industries than any other small business man in the country.

Nobody knows—not even Ernie himself—how many men he has set up as sheepherders, as farmers, or as independent piling operators. These last, by the way, compete with his own com-

pany, at least indirectly. He watches his "partners" like a mother hen with a brood, and helps steer them into profitable ventures.

Nor does he hand his money out carelessly to any who ask him, despite his recognized generosity. Two hard-working stump ranchers, father and son, came into his office one day, looking for help.

"We want a hundred head of sheep, Mr. Whipple," the father said.

Ernie was resting comfortably in his swivel chair, feet up on his scarred old desk, a beaten-down soft felt hat tilted back on his head. "You boys got the old Gordon place, haven't you?"

"That's right."

"I'll give you seventy-five head," Ernie said. "That's all the place will carry. I want to see you make some money, and you can't do it over-grazing your land."

When the stump ranchers had gone, satisfied with the deal, Ernie said, "I like to make some money on everything I'm interested in, but I like to see the other fellow make some, too. That's the only way to operate."

The phone cut in shrilly then, and he scooped it up, propped it in place with the stump of his left arm and bellowed, "Whipple." His feet came off the desk with a thump and he fished a torn fragment of paper from somewhere and began scribbling.

"Okay, Navy," he said. "I got it. Fifteen hundred piles, eighty feet long. They gotta be in San Francisco in ten days. That right?"

There was a pause, and Ernie screwed his face into a grimace of annoyance as he listened to the Naval procurement officer. "Hell," he interrupted, "quit worrying. It'll be there sooner than that." He hung up.

Ernie raised shaggy eyebrows and grinned. "Were you asking me before about my postwar plans? Listen, I got no time to think about postwar—what is it anyway? The Navy wants piling for a hush-hush job, the Army wants piling for some heavy construction, Southern Pacific wants some—everybody's sticking orders in my hands. We got a hell of a lot of docks we got to keep from slipping into the ocean. That's all I got time to think about."

He wrestled into his red plaid coat. "Like I told you, the only postwar plan I got is to furnish piles to rebuild Japan after we knock it down. I'm figuring on being around another twenty years, at least, and I got a good forestry program under way on my lands. The way I'm growing trees I'll always have enough to make the piling my customers want—and that's the only postwar program I'm interested in."

NEW MEMBERS OF THE BOARD OF DIRECTORS

TO SERVE during one of the most critical periods in the history of forest conservation — postwar reconstruction — members of The American Forestry Association, by referendum vote held in December, re-elected Randolph G. Pack of Darien, Connecticut, and elected Walter J. Damtoft of Canton, North Carolina, and Glenn L. Martin of Baltimore,

sociation, and as vice-president of the American Nature Association.

Mr. Damtoft's conservation interests have largely been centered in the South. For three terms, beginning in 1941, he was president of the Southern Pulpwood Conservation Association, and at present is a member of its Executive Committee. He also is a member of the Forestry Committee of the American Paper and Pulp Association; is a member of the North Carolina State Board of Conservation and Development; the Executive Committee of the North Carolina Forestry Association; and the National Council of the Society of American Foresters. In the industrial field, he is forester and assistant secretary of the Champion Paper and Fibre Company; president of the North Carolina Industrial Council, and a director of the American Pulpwood Association.

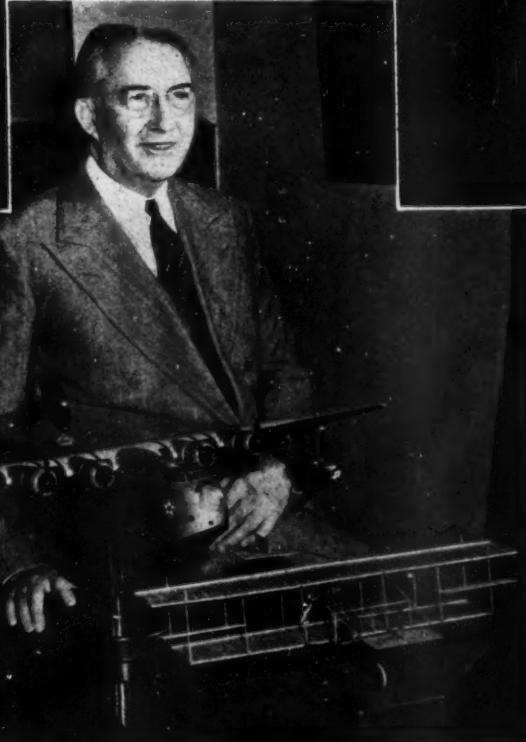
He received his Ph.D. degree from the Sheffield Scientific School at Yale in 1910, and his M.F. degree from the Yale Forest School in 1911.

Glenn L. Martin, president and chairman of the board of the Glenn L. Martin Company, brings to the Board one of the nation's foremost industrialists. As president of the League of Maryland



Maryland, to the Board of Directors. All three men will serve for terms of five years.

Mr. Pack was first named to the Board in December 1943, to fill the unexpired term of A. S. Houghton. His re-election will give to the Board the continuing active service of a business man whose conservation interests have long been allied with forestry. The son of the late Charles Lathrop Pack, who served as president of The American Forestry Association through the first World War, Mr. Pack has carried on his father's conservation interests as president of the Charles Lathrop Pack Forestry Foundation, as president of the American Tree As-



NEW MEMBERS OF THE BOARD

Walter J. Damtoft (upper left), Glenn L. Martin (center), and Randolph G. Pack (upper right)



Sportsmen, his conservation activities have largely been in wildlife restoration and management. Mr. Martin, a pioneer airplane manufacturer, is affiliated with many scientific and engineering organizations both in this country and abroad.

Meeting for the first time on February 22, the new Board, under authority given it by the membership to revise and amend the By-Laws (see page 184), named Ovid Butler executive director and Fred E. Hornaday secretary of the Association. Mr. Butler has been executive secretary since 1922, Mr. Hornaday business manager since 1927.

MANITOBA'S MARSHES PRODUCE AGAIN

By JAMES MONTAGNES

WITH jobs for returning war veterans a major peacetime problem, there is good news for some of Canada's war veterans in the revival of fur trapping as a result of scientific experiments by the Manitoba and Canadian governments. The fur trade was once the Dominion's main industry. Today it is far down the list, due chiefly to unrestricted trapping. But a new day has dawned for fur trappers in Canada, based on developments in northern Manitoba "wilderness" areas.

Fur trapping in the delta of the Saskatchewan River, flowing from the central prairie lakeland region into the Lake Winnipeg area, 300 miles north of the international boundary, had for many years deteriorated. There had been too much indiscriminate trapping, and the wildlife had disappeared from the rich alluvial marshland which forms the delta. During the drought years in the early thirties, this vast area was re-

duced to dried-out reed beds in which fire was likely to start at any moment. The trapping grounds on which several thousand whites, half-breeds and Indians depended for their fur catch had become unproductive. There were but a few hundred fur-bearing animals left, where at the turn of the century there had been close to a million.

The Manitoba provincial government and the federal Canadian government decided, at the suggestion of naturalists, to reclaim the area from drought in the hope of bringing back the fur-bearers and so provide a living for the people of the area. So well has the experiment worked, that now in Manitoba more than 3,580,000 acres of land have been rehabilitated for fur trapping, and a crop of 500,000 muskrats is expected this spring.

When plans were made to rehabilitate the first 134,000 acres in the Saskatchewan delta, residents were recruited for the work as an unemployment relief

project, and the nature of the experiment was explained to them. These men were told that there would be no fur trapping for at least four years while the area was flooded through irrigation ditches and dams. They were told that after the region was once more growing grass and bush and the fur-bearing animals were back, they would be given trapping rights. Thus they worked for a future livelihood, while earning money on the reclamation job.

An elaborate system of dams, ditches, dikes and canals was constructed during the first two years of the work. They ranged in size from a short ditch to such projects as the Little Fish Lake Dam, 470 feet long. At the end of the second summer twenty-one dams, ten dikes and thirteen canals had been constructed, and five patrol cabins had been built. When finally all work had been completed on the initial project, the area was a water-tight compartment. It was then possible to retain the flood waters



Fur trapping disappeared from the Saskatchewan River delta when the marshland dried up in the early thirties. It is now being restored by the government to rehabilitate the people of the region

of adjoining rivers and keep them in the huge compartment.

Plant life began to flourish once more in the area. Game wardens noted a sudden increase in the number of muskrats. In 1935, the first census was taken and sixty muskrat houses were counted. Four years later there were 32,800 houses! In all, some \$150,000 had been spent on the project, with workers receiving sixty to seventy-five cents of every dollar spent.

In 1940 it was decided that there would be a twenty-day spring trapping season. Permits were issued to 400 residents of the area—113 Indians and 287 whites and half-breeds—and each man was allowed to take a maximum catch of 300 muskrats. Every phase of the trapping activity was carefully supervised. One man in every ten was selected as a "senior trapper" and given the responsibility of seeing that trappers under him used proper methods and took no more than their quota. For this duty,



Muskrat houses in the reclaimed territory. So great has been the return of this fur-bearer that 500,000 will be trapped in Manitoba this spring



Part of the elaborate system of dams, ditches, dikes and canals constructed on the project. Dams range from this size to one—at Little Fish Lake — 470 feet long



Trapping in the reclaimed area is under rigid governmental control. Registered trappers are allotted certain areas, must leave sufficient breeding stock to assure their future fur crop

he was permitted to trap 100 extra muskrats.

Each trapper's catch received a preliminary grading by a game warden; his bag of pelts was then sealed and labelled before being stored in a central cabin until spring when the furs were taken to market in Winnipeg. The first year 126,000 pelts were sold by auction at an average price of \$1.39 a pelt. The Manitoba government, because of its expenditures on the project, received twenty percent of the total sales as well as a royalty of five cents a muskrat. The government received \$36,000.

The 1940 catch was based on the annual census of muskrat houses, and it was planned so that there would be enough breeding stock left to produce a still larger crop the following year. The 1941 crop amounted to 191,000 muskrats, which sold for \$360,000, and in which 750 trappers and their families benefited. In 1942 around 300,000 pelts were sold, and the total has gone up each year as breeding stock increased and more areas were reclaimed.

It is of interest to note that the provincial government does not allow the trappers to receive the full amount of the sale of their pelts in one payment. They receive about a third of the total after the auction and the balance in monthly payments, so that at no time between crops during the year are the trappers entirely without funds.

After the original 134,000 acres were reclaimed a second area of 160,000 acres was irrigated, followed by another of 100,000 acres. On the shores of Lake Winnipeg a tract of more than 530,000 acres is receiving similar treat-

(Turn to page 191)

"CONUQUEROS"—FOREST DESTROYERS OF THE ANDES

The Land-Clearing Small Farmer Has Made Entire Regions Uninhabitable in Venezuela

By H. ARTHUR MEYER



To raise meager agricultural crops on the steep mountain slopes of the Andes, the *conuqueros*, or small farmers, burn the sub-tropical forest. The result of such practice is shown below



IN describing the "World's Greatest Hardwood Forests" (December 1944, issue of *AMERICAN FORESTS*) on the eastern slope of the Peruvian Andes, William T. Cox poses the question: "Is this great forest to be wrecked in the same way that we have so largely destroyed our own forests?" When hearing of the thousands of square miles of unbroken tropical forests where an annual rainfall of over 200 inches creates the most luxuriant vegetation, one may be inclined to think that under climatic conditions so favorable to plant growth, a forest can hardly be destroyed in the same way as has been done in temperate zones.

Unfortunately, this is not the case. In other tropical countries, in Central America and the Caribbean, and in the Andes itself, forest destruction has made entire regions uninhabitable for man. Along the Trans-Andean highway of Venezuela, connecting Caracas with the capital of the neighboring country Colombia, the traveler finds only remnants of forests in regions which were at one time covered by unbroken tropical and sub-tropical vegetation. Many of these forests had disappeared long before the building of the Trans-Andean highway. It is not the lumberman who is responsible, in this instance, for the destruction of these forests, but the small farmer, the *conuquero*, who cleared the forests to raise his meager agricultural crops on the steep mountain sides and in the adjoining tropical and sub-tropical country.

Venezuela still has enormous primeval forests in the remote regions of the Andes, along the border of Colombia on the eastern slopes towards the Orinoco basin, in the Amazon territory and the Guinea highlands. Most of these areas are inaccessible, often unexplored, and as such at present are of little economic value. Of the small population of Venezuela, amounting to not more than 4,000,000 people, around fifty percent live in the high altitudes which are free from malaria, that is, in the coastal mountains

and in the Andes. Before the discovery of oil around Lake Maracaibo, Venezuela, was essentially an agricultural country. Enough crops were raised by the early colonists to meet the entire domestic demand. Wheat was planted throughout the Andes up to elevations of 12,000 feet, and before that, corn was the chief staple food of the people of the Cordilleras, as in other parts of the American continent. With the ever increasing trade of Venezuela with Europe and with the United States, the production of wheat became unprofitable. At the same time, an increasing interest arose in the cultivation of cocoa, coffee and other cash crops. However, this development only accelerated the decline which was slowly taking place due to the gradual impoverishment and erosion of the soil on the steep slopes.

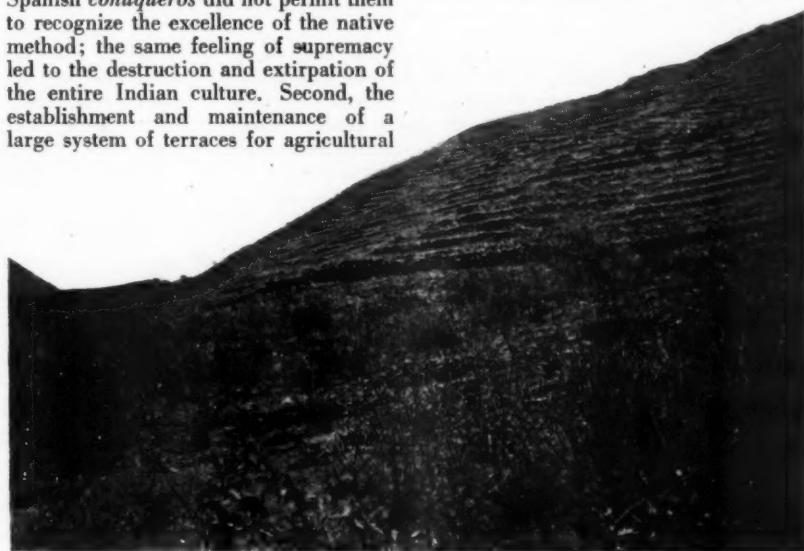
It is well known, of course, that the South American Indian cultivated his mountain slopes, through the establishment of a series of terraces, centuries before the white man discovered the continent. Although this system was most highly developed by the Incas of Peru, it was common practice from Chile to Venezuela. Remains and *yacimientos* of such terraces were discovered in Mérida and Aricagua. The Spanish conquerors admired this ingenious method of cultivation and they originally called the terraces *andenes*, a word which later changed into *andes*, which was to become the name of the entire orographic system of South America.



Typical scene in the Andes — cattle being driven hundreds of miles to market

Unfortunately, the Spanish colonists did not follow or accept this system of cultivation. Two reasons have been advanced for this. First, the pride of the Spanish *conquistadores* did not permit them to recognize the excellence of the native method; the same feeling of supremacy led to the destruction and extirpation of the entire Indian culture. Second, the establishment and maintenance of a large system of terraces for agricultural

practices introduced by the Spaniards, exhaustion of the soil coupled with severe erosion forced the *haciendado* and the small farmer to abandon one piece



Although terraces for mountainside cultivation, a remnant of which is shown above, were highly developed by the Indians, white colonists preferred the destructive practice of land clearing, below — then moving on



production was possible only under a collective organization, characteristic of the ancient culture of the Incas. The individualism of the Spaniards was incapable of maintaining such a social organization. Furthermore, the manpower required to perpetuate the ancient system of agriculture could not be allowed to continue being engaged in work so unprofitable from the point of view of the early colonists.

Under the destructive agricultural

of land after another and to cut deeper and deeper into the virgin forests. Along the Trans-Andean highway, especially in the state of Mérida, the state of erosion is particularly severe. And it would be a mistake to believe that these alarming conditions exist only along this main artery of modern traffic. Actually, it often extends far into the interior, and entire mountain regions, once completely forested, have been transformed into

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DIGGER PINE

Pinus sabiniana Douglas

By G. H. COLLINGWOOD

THE DIGGER, or gray pine is one of the small group of distinctively California pines found only within that state. The tree was discovered in 1831 near Monterey by the young Scottish botanist and explorer, David Douglas, and named by him for his friend Joseph Sabin, then secretary of the Horticultural Society in

London. The common name of Digger pine comes from the fact that the first Europeans to reach California called the native Indians "Diggers," and found them subsisting during a part of the year on the large rich seeds, or nuts, of this pine.

This pale, dusty, blue-green, gaunt tree is characteristic of California's dry interior. It demands full sunlight for growth. Its range is limited largely to the foothills, lower mountain slopes and high valleys, and although it is found as low as 500 feet elevation and as high as 4,000 feet above sea level, in general it likes altitudes of 1,000 to 2,500 feet. Growing well in dry, shallow, coarse gravelly soils, where no other pine can survive, Digger pine adapts itself to sites with rainfall as low as five inches and temperatures from ten to 110 degrees Fahrenheit. It is found mainly on the south slopes of the Siskiyou Mountains, eastward to Owens Valley, in the Sierra Nevada, and southward to the San Bernardino Mountains.

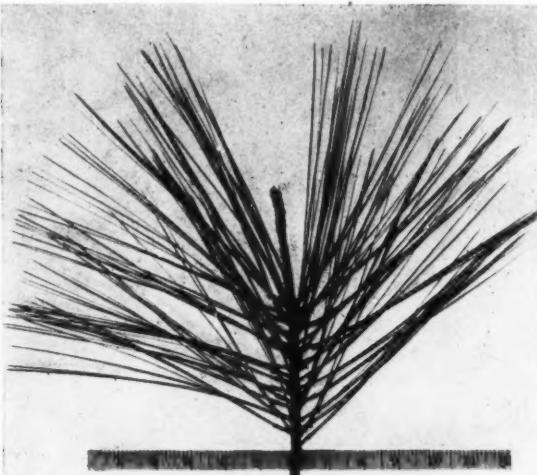
Digger pine does not form pure forests but grows mostly in open groups or singly. At the lower elevations it mixes with ponderosa, Coulter and knobcone pines. Best growth is attained at elevations ranging between 2,000 and 3,000 feet where it competes only with chaparral. In early life it endures shade very well, but later on demands the fullest sunlight.

Its mature form is very irregular, with one or more large limbs curving upward from a usually crooked trunk, or separating into several forks similar to a hardwood. Its odd form, with its rapidly tapering trunk, gray-green, thin-foliaged crown and lower drooping branches, make the tree readily recognizable at a considerable distance.

Old trees vary in height from fifty to eighty feet, with trunk diameters of from two to even four feet. Little is known definitely of its longevity, but it appears to reach its average size in sixty to eighty years. Recurrent fires may prevent a possible survival up to a hundred and fifty years. Young trees have a rounded or



A crooked trunk and open crown characterize Digger Pine—gaunt, hardy tree of California's dry interior foothills



Scant gray-green needles, up to twelve inches long, are borne in clusters of three

pyramidal crown branching from a short, thick stem, with dull gray bark. The bark in mature trees is about two inches thick, roughly furrowed, with wide, irregular scaly ridges. It is dark gray-brown, tinged with purple-red when unweathered.

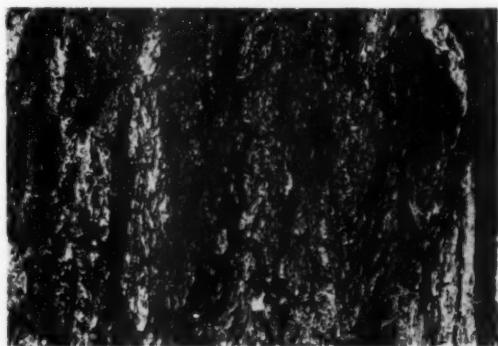
Belonging to the pitch pine group, the needles of Digger pine are light blue or gray-green, from eight and a half to twelve inches long, and grow three to a bundle in thin, drooping clusters. They remain on the tree for three or four years. Its cones are six and a half to ten and a half inches long. Among American pines, only those of Coulter pine are larger and heavier. They occur annually in varying quantities, mature by September of the second year following the blossom, but remain firmly attached to the branches for years. The tips of the cone scales are reddish or chestnut brown, later becoming weathered to a grayish brown. The scales are sharp-pointed and incurved toward the stem, making them difficult to handle. Opening slowly, the cones shed seed during several months. The Indians gather the cones, hasten their opening by fire, and eat the rich, meaty nut-like seeds.

The seed and short wings of Digger pine are dark chocolate or blackish brown. The heavy nuts are seldom scattered by the wind, falling near the seed trees where natural reproduction is usually found. Seed germinate during the winter rainy season, producing seedlings with fifteen or sixteen seed leaves usually under shade and on rough, bare mineral soil.

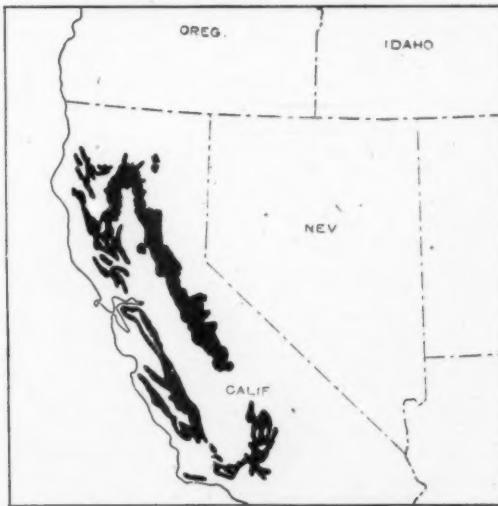
Its dark yellowish brown wood, often tinged with red, is soft and light. Due to growth in open or in scattered stands, the wood is very coarse-grained. It is weak and brittle, a cubic foot of dry wood weighing slightly over thirty pounds. Distillation of the wood produces a nearly colorless aromatic liquid, abietene, used to some extent in making stains. The small commercial value is largely confined to local use for fuel. Its greatest value is as a soil cover in watershed protection, as it grows on sites where no other tree can survive. When planted for ornamental purposes, in fertile, irrigated soil, the needles are stouter, the appearance is more thrifty, and the cones are usually smaller.



Scales of the large, heavy cones are reddish brown, sharp-pointed and incurved



Dark brown, irregularly ridged bark on mature trees is two inches thick



Natural Range of Digger Pine in California

A MEMORIAL FOREST FOR GIBBON . . .

By KENNETH D. MORRISON

YOU have heard it echoed and re-echoed at public meetings—"When this war is over, we're going to erect the finest memorial in the world to the boys who don't come back."

Gibbon, a little town at the edge of Minnesota's prairie country, has been working on its memorial for some time. Known as the Sibley County Memorial Forest, it is a *living* remembrance to the men who will not return to their community.

The people of Gibbon believe that massive stone columns, bronze statues, and similar monuments that have principally an ornamental function, should be relegated to the past. The forty-acre forest which they are planting will be a *productive* memorial. It—and others like it—will under proper management, increase in value. But more than that, it will contribute greatly, and in many ways, to the people of the community.

When the people of Gibbon heard a talk by Richard J. Dorer of the Minnesota Department of Conservation, they decided they wanted to start a memorial forest. The Gibbon Sportsmen's Club later consulted the department and discovered that the state could only supply planting stock for use on public lands. Not deterred, the Gibbonians purchased a forty-acre tract and deeded it to Sibley County as a "conservation area." Men, women and children volunteered to do the planting. They decided on a circular pattern with a center plot 490 feet in diameter, encircled by a thirty-foot drive. Joining this drive and radiating from it to the main road along the perimeter, there are eight drives equally spaced, like the spokes of a wheel.

Following a plan of having the forest's crown slope gradually from the center to the fringe of shrubbery on the outer edge, the center plot was given over to the larger species of hardwoods, such as oaks, sycamores, and black walnut. The next circle was planted to conifers and the smaller deciduous types; and toward the outer fringe they planted mulberries, junipers, dogwoods and plums. Once the 26,000 transplants so far in the ground have advanced to the

point where they form a leafy canopy overhead, the Sibley Memorial Forest will be planted to species of vegetation at home on the forest floor.

Perhaps returning war veterans will find healthful employment in carrying out this work; at any rate, all of them will find a forest on land that was barren and non-productive when they left—a forest in which they may find the sort of outdoor recreation that haunted their dreams on foreign battle-fronts. Gibbon is creating a memorial to those who die in this war. Yet it is more than that. For it will aid those who lived through it to recover more rapidly from the shock of the conflict.

Minnesotans who see and hear about what Gibbon is doing can't help but speculate as to the impetus that would be given to forest productivity and con-

PROTECT, AND PLANT, ANOTHER TREE

By Eugene C. Wachendorff

*When the earth has yielded its store of ore,
When its carboned bin is emptied of coal,
And its reservoir drained of precious oil,
As if wanton waste were the ultimate goal,
Then man again to wood will turn,
Since wood there will forever be;
If man will common sense employ,
Protect,—and plant,—another tree.*

servation if the money that seems destined to be invested in non-productive stone monuments could be diverted into *living memorials*.

Forest memorials can be divided into two types—those that perpetuate a wild, unexploited tract of land of historical or esthetic nature, and those that seek to restore land the utility of which has been impaired. The idea of restoring barren, tax-forfeited lands to productivity is particularly appealing. Such areas can be inexpensively acquired. They can range in size from a few acres to thousands, depending upon the amount of money a community has available for a war memorial. Under



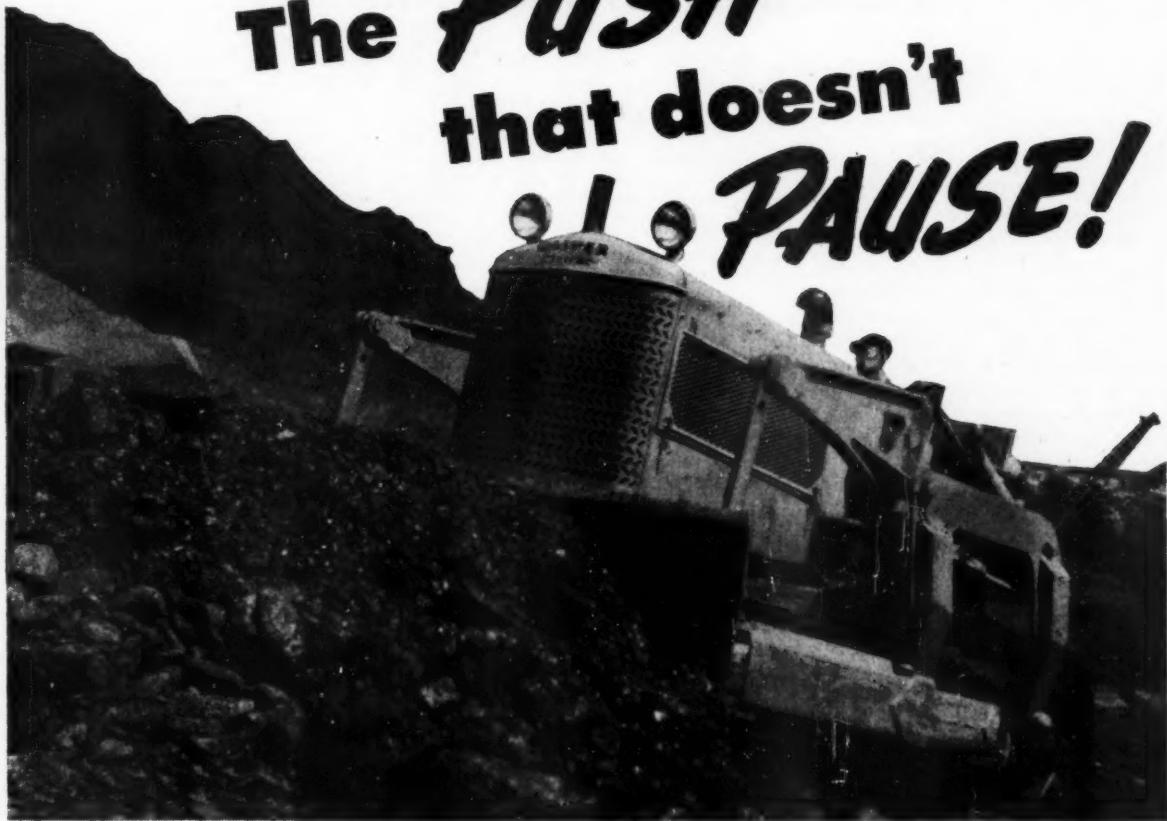
the management of competent foresters, these living patches of green could be made to dot the countryside. Erosion would be arrested and the residue of vegetation would coat the forest's floor as the first step in the long process of rebuilding priceless top soil. Wildlife would reappear and, eventually, each of these *memorial forests* would become an outdoor educational and recreational center, with unlimited opportunities for camping, hiking and exploring nature's secrets away from the clamor of cities.

The cost of individual World War I memorials ranged from a few thousand to millions of dollars. In one midwestern city there stands a lofty column which is reported to have cost \$2,000,000. Even though it is non-productive, no such memorial is valueless, for it symbolizes the heartfelt gratitude and sympathy of a thankful community. But let's consider the possibilities if this same sum had been invested in a *living memorial*. Ten tracts, similar to Minnesota's famous Carlos Avery Game Refuge, of 15,000 acres, could be acquired and developed and there would still remain a fund of \$700,000 to assure their future management.

On the other hand, what would result if this same \$2,000,000 were invested in a forest of 50,000 acres? After payment of the cost of suitable land at average prices, there would still remain more than \$1,000,000 for construction of administrative and fire protection facilities, planting denuded land, and other improvements, as well as to provide for proper forest management.

Now is the time for every American community to start planning a productive *living memorial* to the servicemen of World War II. Not alone will it be a fitting tribute to heroism, but it will contribute to the welfare of the people—a nation's most vital resource.

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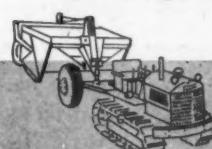
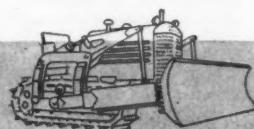
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Association By-Laws Amended

By action of the Board of Directors, meeting in New York City on February 22, the By-Laws of The American Forestry Association have been revised and amended. Authority to revise the By-Laws was given the Board in the following amendment approved by membership vote in December, 1944:

"Article XIII—These By-Laws may be amended by the Board of Directors at any regular or special meeting provided notice of the proposed amendments shall be given to all Directors in writing at least thirty days before the date of such meeting. These By-Laws may also be amended by the members in the following manner. Any amendment proposed in writing over the signatures of fifty or more members, shall be submitted to the members with the next succeeding election ballot and shall be adopted if it receives the affirmative vote by mail of a majority of the members voting thereon. All amendments shall be published in the magazine within ninety days after adoption."

As revised and amended, the By-Laws in full follow. Words and sections deleted by the Board are indicated by a line drawn through them; changes and amendments appear in *italics*.

ARTICLE I—Name

The name of this Association shall be "THE AMERICAN FORESTRY ASSOCIATION."

ARTICLE II—Objects

The ~~objective~~ object of the Association is to bring about a better handling of the forests of the country in order that these may render their highest service in the economic, industrial and social development of the nation. The Association aims to foster and conduct investigation, research, and experimentation in the science of forest production, management and utilization; to assemble information regarding the economic, ~~and~~ industrial and social aspects of forests and regarding the service of the forest in protecting ~~lands~~ soils and waters; to secure from the forest a larger service in outdoor recreation, in perpetuating wildlife, and in other general public benefits; to encourage and further the practice of forestry by individuals, *industries*, municipalities, states and the federal government; to promote educational, legislative and other measures tending to the accomplishment of these objects; to carry on educational projects, including the publication of a magazine and other literature for the education of the public as to the meaning and importance of forestry and for the dissemination of a knowledge of forestry in its various branches; to place before the people of the country various problems and issues in forestry and to forward, in the interests of the public, specific policies of forestry; to aid in the coordination of the efforts of state forestry associations and other organizations interested in problems relating to forests; to establish

and maintain a library; to acquire by purchase, gift, devise or bequest, and to sell, maintain and operate forests and forest lands for the furtherance of the ~~foregoing~~ objects *educational purposes of the Association*; to acquire by purchase, gift, devise or bequest such property, real or personal, and to erect and maintain thereon such building or buildings as may be necessary or advisable in the promotion of these objects; and in general to do and perform all things, necessary to further the foregoing objects.

ARTICLE III—Members and Dues

Sec. 1. Any person, organization, or company may become a member of the Association upon his or its application for membership being approved by the Secretary.

Sec. 2. There shall be ~~seven~~ six classes of members:

(1) Honorary Members, who shall be such individuals as may be elected by the Board of Directors in recognition of outstanding service in the development of forestry or other related branches of conservation;

(2) Patrons, who shall be individuals, organizations, or companies who shall contribute One Thousand Dollars or more at one time to the permanent fund of the Association;

(3) Life Members, who shall be individuals, organizations or companies who shall contribute to the funds of the Association at least One Hundred Dollars at one time or in such installments as the Directors may approve;

(4) Sustaining Members, who shall be individuals, organizations, or companies who shall pay annual dues of Twenty-five Dollars *or multiples thereof*;

(5) Contributing Members, who shall be individuals, organizations or companies who shall pay annual dues of Ten Dollars;

(6) Subscribing Members, who shall be individuals, organizations or companies who shall pay annual dues of Four Dollars. ~~and~~

(7) ~~Annual~~ Members, who shall be individuals who shall pay annual dues of One Dollar.

Sec. 3. Honorary Members, Patrons and Life Members shall be exempt from the payment of annual dues but shall receive the Association's magazine for life.

Sec. 4. Dues for the ensuing twelve months shall be payable when an application for membership is approved and annually thereafter. The membership of all those in arrears for three months shall automatically cease. The Secretary, however, may, in his discretion, remit the dues of any member and he may, subject to the prior approval of the Board of Directors, establish term rates for members who desire to pay dues two, three or five years in advance.

Sec. 5. All members ~~except Honorary Members~~ shall be entitled to one vote each at the meetings of the Association, or by mail ~~as if~~ so provided, and to hold office therein.

Sec. 6. The periodical magazine published by the Association shall be sent regularly to all members, ~~except Annual Members~~, its price being included in the dues. The price of the magazine to non-members and to members of other organizations affiliated with the Association shall be fixed from time to time by the Board of Directors.

ARTICLE IV—Board of Directors

Sec. 1. The Board of Directors shall consist of fifteen ~~elected~~ members *elected* by the

members of the Association together with the President and Treasurer of the Association serving as ex-officio members. It shall have the direction and management of the affairs of the Association, the determination of its policies and the control over and disposition of its funds and property. [All members ~~except Honorary Members~~, shall be eligible as directors.]

Sec. 2. The Board of Directors shall select each year a Committee on Elections, whose names and addresses shall be published in an issue of the magazine not later than during the month of October. The Committee on Elections shall consist of three members of the Association in good standing for at least three years, who are widely known for professional or industrial attainments or public service in forestry, and who represent as far as practicable the professional, industrial, and public interests embraced in the work and objects of the Association. Not more than one member of the Committee on Elections shall be, at the time of selection, an officer of the Association. ~~other than Vice President~~. Suggestions for nominations for any officer of the Association to be elected at the next annual election of officers may be submitted to the Committee on Elections by any member of the Association; nominations for such officers may be made by not less than twenty-five members of the Association, signed by the members submitting them. All suggestions and nominations should be addressed to the Committee on Elections at the main office of the Association and must be received by the Committee on or before November 1. The Committee on Elections shall nominate a candidate for each officer to be elected at the next annual election of officers of the Association.

The candidates nominated by the Committee on Elections, together with any other nominations made by not less than twenty-five members of the Association, and which ~~must~~ have reached the Committee on Elections prior to November 1, shall be published in the December issue of the magazine, with the names of members of the Association making the nomination appended to the nomination of any such candidates. The Secretary of the Association shall cause a ballot to be printed containing the names of all candidates nominated by the Committee on Elections and by any group of twenty-five or more members of the Association as hereinbefore provided and shall mail such ballots to all members of the Association having the right to vote on or before December first. The members of the Association ~~except Honorary Members~~, shall elect the officers by mailing to the Secretary in sufficient time to be received on or before December 31 a ballot containing the names of the candidates to be voted for. Every ballot shall contain the name and address of the member submitting it. The ballots shall be counted by three tellers appointed by the Committee on Elections, who shall decide any questions as to the ballots submitted and who shall officially certify the total vote cast. A majority of the ballots cast shall be sufficient for election.

Sec. 3. Any vacancy among the officers, whether occasioned by death, resignation or otherwise, may be filled for the remainder of the year by the Board of Directors, by ~~ballot~~ at their next meeting after the happening of such vacancy. If a Director shall be elected as President or Treasurer of the Association, the vacancy in the Board of Directors thereby created shall be filled for the balance of the year in the *regular same* manner.

Sec. 4. ~~Seven~~ members *A majority* of the

Along the "Route to Tokyo"

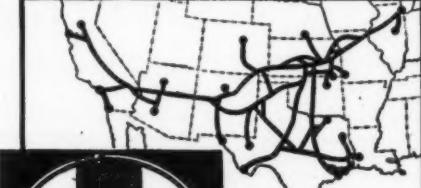


Santa Fe, the map will show you, is an important
lap on the "Route to Tokyo."

That's why, during the past several months,
travelers have seen armies of "Men at Work" all
along our lines.

- Capacity of our yards has been increased.
- Curves have been ironed out so trains loaded
for war may get around them faster.
- New Diesel "head ends" are pulling bigger loads
up tough mountain grades.
- Ingenious Centralized Traffic Control Systems
have been installed at important points so the
same rails can carry 50 per cent more traffic.
- A great, new Santa Fe bridge is now being built
across the Colorado River.

We have enlarged our capacity to meet the
constantly increasing loads of war. There will be no
slackening of our job until the war is completely
won, beyond the shadow of an Axis doubt.



SANTA FE SYSTEM LINES

ONE OF AMERICA'S RAILROADS—ALL UNITED FOR VICTORY

Board of Directors shall constitute a quorum for the transaction of business.

Sec. 5. Meetings of the Board of Directors may be held either at the office of the Association in Washington, D. C., or at such other place in the United States as the President may determine. Meetings of the Board shall be held upon ~~two~~ fourteen days' notice, whenever called by the President or by three members of the Board, and a meeting of the Board shall be held at least ~~once~~ every four months twice in each fiscal year.

ARTICLE V—Committees

Sec. 1. **Executive Committee.** The President may appoint seven members of the Board of Directors to act as an executive committee, which shall have and exercise such powers during the intervals between the meetings of the Board as the Board may delegate to it. The Board of Directors may appoint five members of the Board to act together with the President as an Executive Committee which shall have and may exercise the powers of the Board except the powers of amendment of By-Laws or of filling a vacancy in any office, during the intervals between meetings of the Board.

Sec. 2. **Finance Committee.** The President may appoint three members of the Board of Directors to act as a finance committee in advising with the Secretary and Treasurer with reference to financial matters, and to exercise whatever powers are conferred upon it by the Board of Directors.

Sec. 3. The President shall appoint such other committees from time to time as he may deem necessary to facilitate the handling of Association affairs.

ARTICLE VI—Officers

Sec. 1. The officers of the Association shall be a President, two Vice-Presidents, one Executive Director, twenty-one Honorary Vice-Presidents, fifteen elected and two ex-officio Directors, a Treasurer, a Secretary, and ~~Forester~~ such other officers as the Board shall from time to time determine. The President, the Honorary Vice-Presidents and the Treasurer shall be elected annually by the members of the Association; the two Vice-Presidents shall be elected annually by the Board of Directors. three Directors shall be elected annually for terms of five years each. The Executive Director and the Secretary and the ~~Forester~~ shall be chosen elected by the Board of Directors to serve whatever term they it may designate. The President and Treasurer shall be ex officio members of the Board of Directors. All officers shall serve until their successors are elected.

Sec. 2. Members of the Board of Directors shall serve for terms of five years each. The term of three Directors shall expire at the close of each calendar year, and at each annual election of officers their successors shall be elected for the full term of five years, to be elected for the following terms: At the December 1945 election one Director shall be elected for a term of four years, one for a term of three years, and one for a term of two years. At the December 1946 election one Director shall be elected for a term of three years, one for a term of two years, and one for a term of one year. At the December 1947 election and at each succeeding annual election five Directors shall be elected for terms of three years each, so that the terms of five Directors shall expire at the end of each calendar year. If vacancies occur in the Board of Directors, Directors shall be elected at the next annual election of officers to fill such vacancies, in each case for the unexpired term of the Director whose position has become vacant [as shall have been determined by the original election of such Directors].

ARTICLE VII—Duties of Officers

Sec. 1. **The President.**—The President shall be the chairman of the Board of Directors and shall preside at all meetings of the Association and of the Board of Directors. In his absence the members present at any meeting of the Association or of the Board of Directors, as the case may be, shall appoint one of their number to act as chairman of the meeting. The President shall be ex-officio a member of all committees.

Sec. 2. **The Vice-Presidents.**—The two Vice-Presidents shall perform such duties as shall from time to time be assigned to them by the President or the Board of Directors.

Sec. 3. **The Executive Director.**—The Executive Director shall be the managing and executive officer of the Association. He shall have general custody of the records and archives of the Association and, in the absence of the President, shall conduct the business of the Association, subject always to the Board of Directors.

Sec. 4. **The Treasurer.**—The Treasurer shall have the custody of the funds of the Association, shall countersign all checks, shall perform such other duties in connection with the finances of the Association as the Board of Directors may order, and shall present to the Board of Directors at their first meeting each fiscal year a statement showing the receipts and disbursements of the Association for the preceding fiscal year and its assets and liabilities. The annual financial report for any ~~calendar~~ fiscal year shall be printed in an issue of the Association magazine published not later than the month of March following, ~~three months following the close of the fiscal year~~.

The Board of Directors may appoint an Assistant Treasurer to countersign checks, in the absence or disability of the Treasurer, or during any vacancy in that office, and to perform such other duties in connection with the finances of the Association as the Board may require. Checks shall be signed by the Executive Director or by such other officer or agent of the Association as shall be designated from time to time by the Board of Directors.

Sec. 5. **The Secretary.**—The Secretary shall be the managing officer of the Association, shall keep the minutes of all meetings of the Association and of the Board of Directors, shall have the custody of the seal of the Association, and of all documents, books and collections, shall sign all checks, shall conduct the correspondence of the Association, not otherwise provided for, shall keep a list of the members of the Association with their addresses, shall notify members of the Association and of the Board of Directors of the time and place of all meetings, and shall perform such other duties as the Board of Directors or the Executive Director may require.

ARTICLE VIII—The Forester

The Association shall employ Board of Directors may appoint a Forester who shall be a man of recognized attainments and high standing in forestry matters. He shall be the expert of the Association in its technical work and a representative of the Association in its public forestry activities. Under the direction of the Board of Directors, he shall hold a responsible relationship toward the editorial policy of the magazine published by the Association as to forestry matters, shall promote the objects set forth in Article II of these By-Laws, shall advance such public forest policies as the Association may endorse, shall represent the Association in connection with national, state, municipal and private forestry developments, and shall perform such other duties as the Board of Directors may require, shall from time to time be assigned to him by the Executive Director.

ARTICLE IX—Official Publication

The official publication of the Association shall be its magazine *AMERICAN FORESTS*. The magazine shall serve as one of the media of the Association for the dissemination of information regarding forestry and related fields of conservation, and shall provide a forum for the discussion of subjects pertinent to these fields. The Directors may change the name of the magazine if in their judgment such action will serve better to carry out the objects of the Association.

ARTICLE X—Meetings

Sec. 1. The annual meeting of the members of the Association for the ~~transaction~~ consideration of such business matters as ~~most~~ may be ~~transacted~~ considered by the entire Association—~~excepting the election of officers~~, shall be held in Washington, D. C., or at such other place, on such day and at such hour as the Board of Directors shall determine.

Sec. 2. Special meetings of the members of the Association may be called at any time by the Board of Directors.

Sec. 3. Notice of the Annual Meeting, and of any special meeting, shall be published in the magazine of the Association at least three weeks before the date fixed for the meeting.

Sec. 4. The presence of thirty members of the Association shall constitute a quorum.

ARTICLE XI—Local Representatives and Affiliated Organizations

Sec. 1. The Board of Directors may designate such representatives of the Association in various portions of the United States and under such conditions as to compensation or payment of traveling expense as it shall deem wise and desirable in furtherance of the objects of the Association. The local representatives so designated shall perform their duties under the direction of the ~~Secretary or Forester~~ Executive Director of the Association as the Board of Directors may determine.

Sec. 2. The Board of Directors may when in their judgment the objects of the Association can more effectively be carried out, approve under conditions to be prescribed by them, the organization of state or regional chapters of the Association; and they may by resolution recognize and designate as organizations affiliated with The American Forestry Association such state forestry associations or other organizations active in or desirous of promoting the conservation of forests and other natural resources, which, in the judgment of the Board, in view of their character, membership, and purposes, make affiliations desirable in furtherance of the common objects of the Association and of the organizations desirous of affiliation. In carrying out the objects of this section, the Board of Directors may prescribe the conditions of affiliation[s] and may fix the price at which the Association's magazine will be furnished to affiliated members.

ARTICLE XII—Amendments

These By-Laws may be amended at any ~~annual~~ election of officers of the Association by a two-thirds vote of the members voting by mail, by the Board of Directors at any regular or special meeting provided notice of the proposed amendments shall be given to all Directors in writing at least thirty days before the date of such meeting. These By-Laws may also be amended by the members in the following manner: Any amendment proposed in writing over the signatures of fifty or more members, shall be submitted to the members with the next succeeding election ballot and shall be adopted if it receives the affirmative vote by mail of a majority of the members voting thereon. All amendments shall be published in the magazine within ninety days after adoption.



Shenandoah, Iowa
October 6th, 1944.

Mr. H. Seaman, President,
Seaman Tiller Division,
Seaman Motors,
322 No. 25th St.,
Milwaukee 3, Wisconsin.

Dear Mr. Seaman:-

We are very well satisfied with our first Season's experience with your six foot Motorized Seaman Triple Tiller. As the operation of the Tiller, and the results being obtained, have been under very close observation all Season, we are now able to confirm your claims from our own experience.

By using your Tiller, we prepare better seed beds with one-fourth the hand labor formerly required. Proper soil preparation is now completed in minutes rather than hours. Soil can now be worked shortly after heavy rains. Fertilizer, sand etc., can now be evenly worked into the soil. Clods are pulverized above and below the surface so that all air spaces are permanently eliminated. The prepared soil is in prime condition for rapid economical planting of seeds or plants.

This perfect soil preparation is reflected in better stands and better plant root systems - finer quality, better value, and greater net profits. This is not just my opinion, but it is proven by our experience this Season.

Your Tiller is an important factor in our long range program to maintain and improve the quality of our stock by soil conservation and soil rebuilding.

Cordially yours,

MOUNT ARBOR NURSERIES,
BY *Joseph A. Abrahamson*,
Joseph A. Abrahamson,
Farms Manager.

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better seed beds

with one-fourth

the hand labor

formerly required

MOUNT ARBOR NURSERIES of Shenandoah, Iowa, — the world's largest nursery, — in their seventy outstandingly successful years have kept constantly alert to new methods, — new techniques to improve the quality of their stock. That's why they've been so successful . . . and that's why their soil preparation is handled by the SEAMAN TILLER.



This letter from Mr. Joseph A. Abrahamson, Farms Manager for Mount Arbor Nurseries, tells the story of the SEAMAN TILLER for better than words of ours . . . You, too, can reap the benefits in labor saving, in better stands and in better seed-beds that the SEAMAN TILLER brings about. Full information is yours for the asking.

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BIG ONES!



For years Atkins Silver Steel Crosscuts have been prime favorites in the big timber. For cutters, tackling the giants of the American forests, soon came to know them as the saws of superior cutting qualities. Segment ground, these saws run fast and easy in the cut. Tough "Silver Steel" means tough teeth — teeth that take and hold a sharp edge for good long cutting periods, with mighty little filing. Right down to the correctly-designed handles, Atkins Crosscuts are the saws that expert cutters take along when they "put the bite on the big ones." Catalog showing full range of types and sizes is available on request.

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The World Over

Communities Asked to Fight Elm Disease

AN organized community attack on Dutch elm disease is urged by Dr. P. N. Annand, chief of the Department of Agriculture's Bureau of Entomology and Plant Quarantine, as one of the best ways to suppress the disease, wherever it is known to exist. He cites the campaign of the Garden Club of Middletown, Connecticut, as an example of what a community can accomplish and commends the club and municipal authorities of that city for their good work in helping to check the disease in that community in 1944.

There are many other cities and towns that might undertake similar community control measures as the area most heavily infected with the disease includes portions of Connecticut, Massachusetts, New York, New Jersey and Pennsylvania, with smaller isolated infections in Delaware, Maryland, West Virginia, Ohio and Indiana.

The Middletown Garden Club reports that several hundred dollars were spent last year for Dutch elm disease control work. Of this amount the town appropriated a large part. The balance was raised by subscription. All elms in the town known to be infected were removed. This involved fifty trees, ranging up to forty-one inches in diameter.

As there is a prohibition on expending federal funds to remove infected trees, communities in the infected area must redouble their efforts to fight this devastating fungus disease, says Dr. Annand. Federal work now includes survey scouting outside known infected areas to determine the spread of the disease, laboratory work to identify the fungus in diseased trees, and research on methods of community control.

Finding diseased elms requires considerable detective work. Federal scouts say that one of the best guides to help them in tracking down elms infected with the Dutch elm disease, is the woodpecker. Woodpecker feeding on elms is a well-known sign that elms are infested with bark beetles which spread the destructive fungus from diseased elms to healthy trees.

One tree in Orange, New Jersey, which was not removed in time was found to have spread the Dutch elm disease in one season to elms in a radius of 2,100 feet. This increased the number of diseased elms to 142 in 1944. Fifty-eight of these were valuable street or lawn trees.

1 OUT OF 6 ADULTS

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GIVE!

Eminent scientists lack funds for experiment . . . cancer clinics are starved for equipment . . . money is needed to care for advanced cases.

Five million dollars a year might cut the deaths from cancer. Might save you, one dear to you. Yet Americans give less than one million dollars. Do your part! Send us anything from 10¢ to \$1,000. Every bit helps!

AMERICAN CANCER SOCIETY

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REMEMBER

**THE MEN WHO ARE
FIGHTING FOR YOU**

**NOTHING WE CAN DO AT
HOME CAN FULLY REPAY
THE DEBT WE OWE THEM**

BUT WE CAN...

Buy WAR BONDS

Beichler Named North Carolina State Forester

W. K. BEICHLER, for the past three years assistant state forester in charge of fire control, has been named state forester of North Carolina. He succeeds J. S. Holmes, who will remain with the State Department of Conservation and Development as associate state forester.

Mr. Beichler has served the state continuously for eighteen years. Beginning as a district forester at Asheville in 1927, he became assistant chief of fire control and, in 1942, chief of that division. Earlier experience was with the

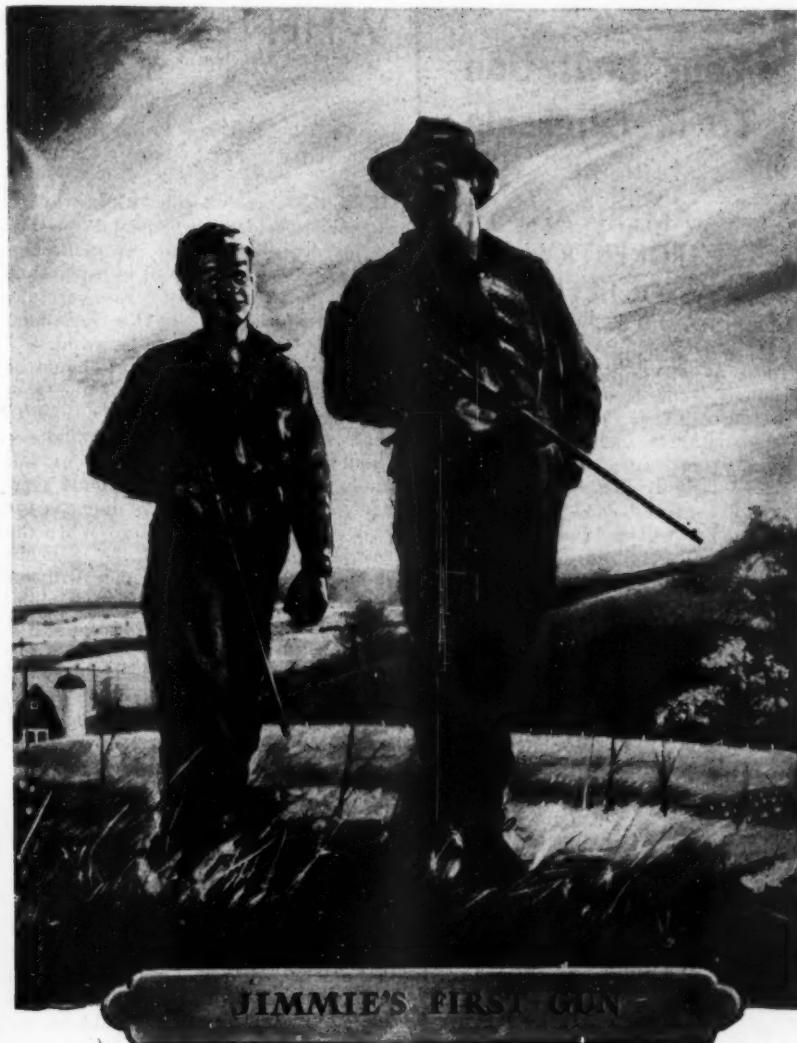


W. K. Beichler

U. S. Forest Service in North Carolina, Minnesota and Idaho. He is a native of Pennsylvania and a graduate of the Penn State School of Forestry.

Mr. Holmes, one of the pioneers of forestry in this country, was the first and only state forester to serve North Carolina up to Mr. Beichler's appointment. He had been continuously on the job for more than thirty-five years and enjoyed the distinction of having been the oldest state forester in the United States in point of service.

Commenting on this shift of responsibilities, R. Bruce Etheridge, director of the Department of Conservation and Development, said of Mr. Holmes, "His career has been an inspiration to all of us in the department and we are happy to be able to retain his services."



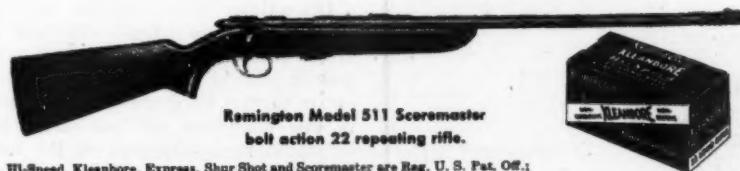
One of the proudest days in any boy's life is the day Dad gives him his first 22 rifle—especially if it's a sturdy Remington with some powerful Remington Hi-Speed 22 cartridges.

We hope that the time is not far off when once again we can supply Remington rifles and shotguns, Remington Hi-Speed 22's with Kleanbore priming, Remington Express and Shur Shot shells, and Remington big game cartridges

with soft-point Core-Lokt bullets. *Remember, If It's Remington—It's Right!* Today, of course, we are engaged in the production of military materiel. Remington Arms Company, Inc., Bridgeport 2, Conn.

Remington

DU PONT



Hi-Speed, Kleanbore, Express, Shur Shot and Scoremaster are Reg. U. S. Pat. Off.; Core-Lokt is a trade mark of Remington Arms Co., Inc.

Your Invitation To Membership IN THE AMERICAN FORESTRY ASSOCIATION

TO provide a basis for informed postwar handling of one of the country's most important natural resources, The American Forestry Association is undertaking a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when the manifold problems of reconstruction are at hand. This important undertaking is known as the Forest Resource Appraisal.

Public-spirited citizens, industrialists and organizations alert to the need of forest conservation and development in postwar economy are making this survey possible by underwriting its estimated cost of \$250,000.

Many other individuals and organizations are indirectly supporting this activity through membership in The American Forestry Association. We would welcome your participation in the important program of the Association, and for your convenience the various classes of membership are listed in the coupon below.

The American Forestry Association,
919 17th St., N. W., Washington 6, D. C.

I hereby apply for membership in The American Forestry Association and enclose \$_____

INDICATE CLASS DESIRED

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AMERICAN FORESTS Magazine
is Sent Monthly to Members.

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4-45

WHEN YOU TRANSPLANT

By L. C. CHADWICK

Associate Professor of Horticulture, Ohio State University

IF you are considering adding or rearranging shade or ornamental trees this spring, it will pay you to give particular attention to the process of transplanting. This operation must be carefully planned and carried out if serious damage or complete loss is to be avoided.

To begin with, every effort should be made to retain as much of the root growth as possible. Trees over three to three and a half inches in diameter should be moved with a ball of soil about their roots. This ball should average approximately a foot in diameter for each inch in trunk diameter. When the tree is about to be moved, the branches should be tied in so that they will not be broken during the operation. Handle the tree carefully so that the bark will not be injured. The hole in which the tree is to be planted should be of ample size to accommodate the roots when they are spread out, so that they will not be in a crowded or crossed position. With balled plants, make the hole two feet wider than the ball. If the soil is heavy, good drainage should be provided, preferably by a tile drain carried to a free outlet. Set the plant at the same depth as it grew before.

Commercial practices vary regarding the removal of burlap when balled and burlapped trees are planted. Some vary the practice with the grade of burlap and the condition of the ball. It is my opinion that the burlap should be removed whenever possible. This is particularly true where heavy grade burlap is used. If the tree is properly guyed following the planting operation, it makes little difference if the ball is broken in the removal of the burlap. The roots will not be injured if the ball breaks after the plant is in the hole and the backfill is ready to be put in. The removal of the burlap allows for better movement and distribution of water and consequently better root growth.

Proper aeration and sufficient moisture are prerequisites for satisfactory root growth. In planting, care should be taken to be sure that oxygen and moisture bear proper relationship to one another.

Often-times trees, shrubs, or evergreens, dug from a heavy clay soil will arrive at the planting site with the outer inch or more of the ball sufficiently dried out to form a hard crust. Balls planted in this condition are not satisfactory for rapid reestablishment of the roots. The crust may be so hard that it inhibits

ready movement of air and water to the roots, and furthermore the new roots penetrate the crust very slowly, if at all.

At least two alternatives are possible in handling balls in such condition. One method consists of puncturing the ball. This can be accomplished with an inch and a half soil auger; drilling holes to various depths of twelve to eighteen inches, and every two to four feet apart, into the top of the ball. Fill the holes with sandy soil or one containing considerable peat moss. The uneven depth holes will allow the whole soil ball to be soaked more evenly when it is watered. This method should prove satisfactory if the soil is not too heavy or the crust too hard. If this method is all that is necessary, delay the operation until after the backfill has been made.

The other method is the most drastic but often the most satisfactory. This consists of forking off six to twelve inches of the ball and replacing it with good soil as used in the backfill.

Only good soil should be used about the roots or about the soil ball moved with the roots on balled trees. The suggestion is usually made in planting trees to pack the soil very firmly beneath the ball so that air pockets will be avoided. It may be that we worry too much about air pockets. The thorough packing and tamping of the soil around the ball may be more detrimental than a few small air pockets. I see no objection to packing the soil rather firmly, as it will help to keep the plant to the perpendicular. Other than the soil beneath the ball, the amount of tamping and watering at planting time should depend upon the soil type and its moisture content. Heavy clay soils or others of high moisture content should not be trampled or tamped too firmly. Tight packing of such soils may result in the almost total exclusion of air and poor root response. Add the soil in successive four- to five-inch layers, packing each less firmly as the top of the hole is approached. Leave most of the backfill, particularly the upper half, loose and mellow.

It is usually advisable to remove part of the top of the tree following the planting operation. Since some of the roots are destroyed in the operation, it is advisable to balance the top with the ability of the roots to absorb food and water. Usually a fourth to a third of the leaf bearing wood of the plant can be removed without destroying the shape or appearance of the plant. This prun-

ing will consist of thinning out crossed and close growing limbs and cutting back the side branches to some extent.

As a means of protecting the tree from sun scald, borers and the loss of moisture, the trunk is usually wrapped. Strips of burlap or Saxalin Kraft paper, varying in width from three to ten inches, are used for this purpose. Starting up in the tree above the first branches, the burlap or paper is wrapped spirally around the tree until it reaches the ground level. It is advisable to leave this wrap on for two or more years if it remains in good condition. Following this operation, the tree should be guyed or staked. If the tree is small, two stakes, approximately eight feet long, driven into the soil near the tree will provide adequate means for support. Hold the tree in place by running a wire through an old piece of rubber hose and carry the hose around the tree from the stakes in the form of a figure eight. With larger trees, it is advisable to use cables, inserted well up in the tree to lag hooks and run to a "dead man" buried in the soil.

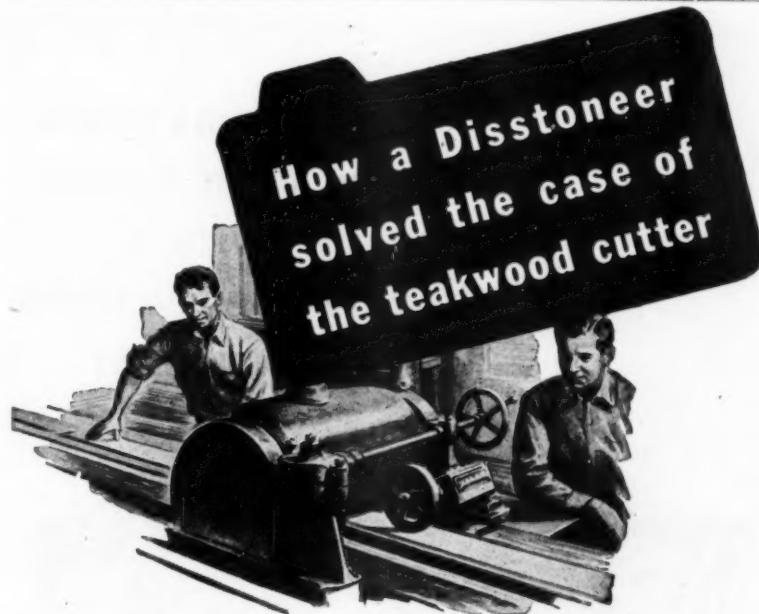
Manitoba

(From page 177)

ment for the propagation of beaver, fisher, otter and muskrats. Another block of 2,500,000 acres farther north between the Hays and Gods rivers, just inland from the west shore of the Hudson Bay, has been set aside specifically for beaver.

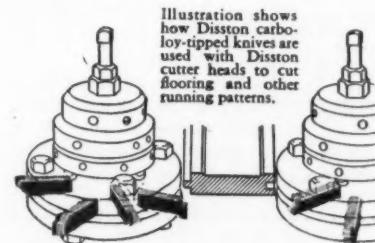
The valuable experience gained from the rehabilitation projects is now being applied to thousands of square miles of registered trap lines set up along the Hudson Bay Railway route between The Pas and Churchill. Under this scheme, registered trappers are given an exclusive section in which they alone may trap. The first such areas show a remarkable increase in fur population. There is no longer need for a trapper to take every fur-bearing animal he sees or can trap, for fear another trapper may get the animal. Each registered trapper knows that he alone traps his area, and so he leaves sufficient breeding stock to assure a crop in the years to come. Along the Hudson Bay Railway it is estimated that there is sufficient area to accommodate from 750 to 1,000 registered trappers under this plan.

With reclamation and conservation plans like these now in force in Manitoba, there is a future for Canada's fur trappers, and a place for many war veterans who want to live outdoors in Canada's northland where fur crops can be raised through the scientific handling of nature's resources.



A manufacturer received an order for tongue and groove flooring made of teakwood, a highly abrasive wood that is difficult to work. High-speed knives were used, but they wore down so fast that regrinding every 15 minutes was necessary. Production between grinds amounted to only 1200 linear feet; and in order to assure satisfactory workmanship, an inspector had to be kept on the job.

The Disstoner* called in to study this problem, recommended the use of knives tipped with Carboloy, the "hardest metal made by man." The Carboloy knives ran 20 hours before grinding was needed (80 times as long as the other knives), 100,000 linear feet of flooring was produced, and cutting was so accurate that the inspector was no longer needed.



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DISSTON METAL CUTTING BAND SAWS

Made of tough, durable Disston steel, in two types: (1) *Hardened Throughout*, for high-speed cutting of thin sheet steel, aluminum, plastics, etc., regular or pullman teeth; and (2) *Hard Edge Flexible Back* for low speeds on all materials adaptable to metal cutting band saws; three different sets—Straight, Raker and Group. Disston Metal Cutting Band Saws are made to fit different makes of machines.

HENRY DISSTON & SONS, INC., 494 Tacony, Philadelphia 35, Pa., U. S. A.

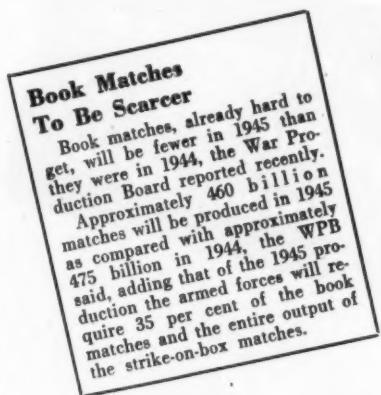
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CONSERVATION CALENDAR

Important Bills in Congress With
Action—February 14—
March 12, 1945

Bill Enacted

S. 35—OVERTON, Louisiana—Authorizing the construction, repair and preservation of certain public works on rivers and harbors. Passed Senate January 29, 1945. Passed House February 22, 1945. Signed by the President March 2, 1945. Public Law No. 14.

Forestry

S. 648—RUSSELL—To amend section 4 of the (Clarke-McNary) Act entitled "An act to provide for the protection of forest lands, for the reforestation of denuded areas, for the extension of national forests, and for other purposes, in order to promote the continuous production of timber on lands chiefly suitable therefor," approved June 7, 1924. Introduced February 27, 1945 and referred to the Committee on Agriculture and Forestry.

National Monuments

S. 664—KILCORE—To amend the act entitled "An Act for the preservation of American antiquities," approved June 8, 1906. Introduced March 1, 1945, and referred to the Committee on Public Lands and Surveys.

Water and Stream Control

S. 535—MYERS—To prevent pollution of the waters of the United States and to correct existing water pollution as a vital necessity to public health, economic welfare, healthful recreation, navigation, the support of invaluable aquatic life, and as a logical and desirable postwar public works program. Introduced February 15, 1945 and referred to the Committee on Commerce.

H. R. 2540—BENDER—To establish an Ohio Valley Authority to provide for unified water control and resource development on the Ohio River and surrounding region in the interest of the control and prevention of floods, the promotion of navigation and reclamation of the public lands, the promotion of family-type farming, the development of the recreational possibilities and the promotion of the general welfare of the area, the strengthening of the national defense, and for other purposes. Introduced March 8, 1945, and referred to the Committee on Rivers and Harbors.

Faith in the Land

(From page 156)

ton to provide an outlet for all timber species. He engaged a forestry-trained engineer from the federal Forest Service as logging superintendent and instructed him to work out a permanent forestry program for the company. He bought cutover lands from his neighbors and built up a holding of 150,000 acres of growing trees. He studied technical literature on the seeding and germination of Douglasfir. There was scarcely a detail pointing up to the great enterprise he had at heart which did not feel the personal touch of this man of practical affairs.

Mark Reed teamed up with George Long in shaping the early Forest Code of Washington and organizing the fire associations. He was a member of the legislature for seventeen years and worked indefatigably to carry into state law, step by step, the practical conservation which he and Long and other timbermen were learning in the woods.

Each of these three men kept his faith in the land—through the glamor of mastering virgin country, the strain of hard times, the perplexities of tax and fire hazards. Each of them, working in his own way, created a great area of growing forest for the men who followed.

If this were a moving picture, turning pages would now take us swiftly through the years. They would flash the impact of the national conservation movement and of day by day cooperation with Uncle Sam's foresters; the infiltration of young woodsmen trained in forest schools; loggers learning how to seed and grow Douglasfir, the hard way, from bitter lessons in fighting fire. Then the set-back of depression; and the dynamic pages of the last ten years.

The National Industrial Recovery Act came and went, but left a legacy to the Pacific Northwest—a code of reforestation written and enforced by the industry. "Tree Farms" began to dot the Cascades and Coast Ranges, spreading out to 2,500,000 acres. Oregon enacted a law enforcing the A.B.C.'s of good forestry. A cooperative lumbermen's nursery appeared on the Nisqually River and began the yearly distribution of millions of forest seedlings for replanting old burns. The "possibly profitable enterprise" of growing timber which George Long hoped for became a reality; and more than one hard-headed logger of the old school bought back the very cutovers he had let go for taxes.

Many men came to the western forests with capital and many with axes over their shoulders. Plain, everyday men who worked and risked and fought with the rest. They played the game ac-



1. Fact. From Boeing's ultra-colossal plants at Seattle and nearby Renton, these cargoes go winging to Tokyo . . . via B-29! Raw materials and sub-assemblies for the B-29 Superfortresses are delivered to Boeing by N. P., for speedy "re-shipment" to Nippon.

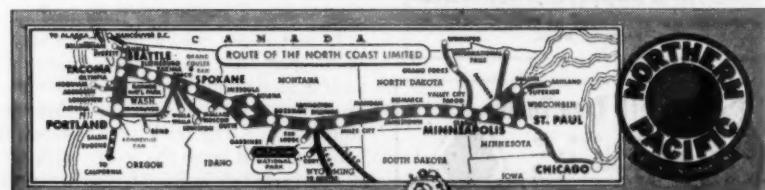
2. Fact. It's a Sturgeon Sea-Poacher, one of many weird fishes occasionally found in the huge catches of sea food which move across Seattle's piers. The Seattle waterfront, one of the world's great ports, transfers enormous cargoes to Northern Pacific.

3. Fiction. Many miles of modern trackage were built in the city by Northern Pacific before the war, to match Seattle's brilliant

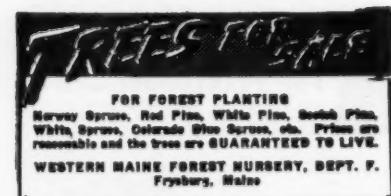
future. Foresighted service to Seattle industries has helped make N. P. the No. 1 rail system in Washington State—in size, mileage, taxes paid, payroll, and volume of freight and passenger business.

4. Fact. Building materials, household appliances, food—and people—came to the city via the "Main Street of The Northwest", the rail line that links most of the Northwest's important population centers.

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cording to the Rules of the Game; but here and there one looked beyond the hurly-burly of falling timber. Some started "Tree Farms" long before the name was coined. Some were planting trees—as far back as 1905; some were testing selective logging; some were co-operating with the Forest Service in seeding and cutting experiments.

Before the first World War, Alec and Robert Polson tried out ways of handling logging slash that would most surely start a new forest. They fought slash fires where little trees were growing. Their lumberjacks collected cones and scattered tree seeds on 2,600 acres

where the fires got away.

Faith in the land! Among the thickly standing young firs and hemlocks you cannot tell today which trees were seeded by old Alec and which by Mother Nature. But the 84,000 acre Polson "Tree Farm" is an assurance of future mills and payrolls on Grays Harbor.

The Pacific Northwest is moving toward a forest economy like that of Finland or Sweden. The change is slow and ragged, but has the deep current of an industrial evolution. Many springs have fed this current; but its headwaters flow from soil-bred foresight within the industry itself.

Forest Exchange

(From page 148)

sant with all the technical details of forestry; I am just a plain garden variety taxpayer who enjoys tremendously the privilege of using, under proper restrictions, the government park and forest reserves.

I am inclined to feel that Tom Alexander is more on the right track than the Cains, particularly on the public point of view. I had the privilege of visiting this area—McGee Springs and Breakneck—just prior to the closing dates of the national park. I went there because I had heard much about Three Forks, and although my directions were reasonably clear and well defined I was unable to find it. If the park wardens, as stated in the Cains' article, visited there this fall, they must have the faculties of mountain goats or some other species which can penetrate the impos-

sible. It seems to me that this area has grown up to a point where the Indians would like to give it away.

What is the function of the National Park Service? Is it to protect these public reserves so that they can be properly used under proper restrictions by the tax-paying people? Or are they to be kept, as again stated in the Cains' article, as an area to be used by those institutions which probably contribute nothing to their upkeep? It seems to me that both ends can be accomplished—that nature may be protected so as to maintain its original beauty and also trails may be opened so that people, other than the technicians, may enjoy it.

I hope you will clarify to us "neophytes," so to speak, just what the National Park Service is supposed to do.—G. Y. Klinefelter, Baltimore, Maryland.

Bargain Day Along the Creek

(From page 159)

Now, how about using some of those worms? If you don't know the rudiments of using a worm for bait, you have missed much in childhood. It's not too late, however, to rectify the omission.

It is simple, primitive angling, this business of using a worm. But it's productive. There are two schools of worm fishermen—those who fish with a spinner and those who do not. Each method has virtues. Much depends on the weather and the color of the water. In dark water, a spinner is indicated.

In any event, you'll need a couple or more split shot for sinkers, placed on your leader about a foot above the hook. There's real art and science in threading your worm. The trick is to conceal the hook and still leave the worm with plenty of wiggle left in it. If your worm has been properly domesticated and fed, he will be virile and tough—will wriggle entrancingly when in the water.

Cast as usual, quarterly and up-

stream. Hold a fairly taut line and keep the bait moving. When you sense that a trout is making a pass at the worm, release the line tension just long enough to let the fish get the worm completely in its mouth before you strike. Then strip in line gently and when you feel resistance, snap your wrist. You may have a fat old brownie or a seven-incher. Be ready, however, to handle any size, for this is purely grab bag fishing. Anything can happen—and probably will.

If you are fishing your garden hook with a spinner, it's safe to strike the second you feel the trout. The chances are he is big and will rush in and gulp.

There is very little about bait fishing that resembles fly fishing. It demands a new technique. It requires genuine skill, sound thinking and a knowledge of trout and their habits. Once you even partially master the technique, however, you will be able to return home with some notable fish.

The best of luck to you.

GI Loggers in Burma

(From page 165)

found the stiff legs to be awkward to handle in the dense Burmese jungles, so Pfc. Walter Nourse of Portland, Oregon, and Sgt. Pat Treat, of Priest River, Idaho, both veteran far Western logging contractors, designed the jammer, patterning it after equipment they had used in civilian life.

The resulting home-made rig was a conglomeration of "midnight requisitioning" and discarded equipment. Drums were taken from a shovel, gears were taken from TD-18 tractors, a motor was taken from a Dodge weapons carrier. The framework was formed with lengths of scrap steel welded together in the outfit's heavy equipment shop. A pole was fashioned from a log. And the whole contraption was mounted on an English lorry.

Nourse was operating the jammer. Every time he'd push or pull a lever, the jammer would creak and groan and a heavy log would lurch off the ground, dangle in mid-air for a moment then swoop gently down on the truck, scarcely jarring the vehicle.

Looking at the maze of levers and cables and gears with which Nourse toyed so casually, I remarked, "Don't you ever miss the truck when you're loading logs?"

Nourse grinned and pushed a faded fatigue cap back over his straight black hair. "Brother, when you've operated one of these things as long as I have, you could use it to serve a twelve-course dinner and not spill a drop of gravy."

I followed Roberts along a narrow trail a half mile into the jungle. Every few yards we stopped and scraped ugly, purplish leeches from our clothing and skin. "How do the loggers stand these damned leeches?" I asked the captain.

"They rub mosquito repellent on their clothing and body before coming into the jungle," he replied. "We have found that Mr. Leech has a hearty dislike for repellent."

Deep in the jungle we found the loggers at work in a stand of giant hollong trees. Cpl. Wright Vander Wegen, of Thorp, Wisconsin, and Pvt. John Spaulding, of Ketchikan, Alaska, were preparing to fell one of the giants. First step in the felling operations was to notch the tree. This is done to control the fall of the tree in the desired direction.

After notching the tree, the men started the main cut on the trunk about three feet above the ground and opposite the notch. Using a gasoline-powered Mercury chain saw, the loggers quickly worked into the heart of the tree. Within four minutes, the tree began to rumble and creak. Slowly, the 100-foot

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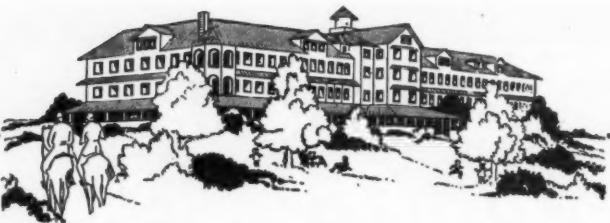
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giant leaned forward, then with a reverberating crash it thundered to earth, bringing with it a shower of vines and leaves. As the clouds of debris settled back down on the jungle, we measured the stump of the tree. It was forty inches in diameter.

Another West Coast method of logging has been adopted in the Burmese jungles, Roberts said. It is known as the spring-board method of felling trees, and is used on big timber which swells drastically at the butt. In such instances, the usable timber starts approximately seven to ten feet above the ground.

We found a large tree a short distance away which Pfc. G. K. Gunderson, of Wallace, Michigan, Pvt. Russell Stewart, of Sheboygan, Wisconsin, and Pvt. Skoviera were preparing to fell with the springboard method.

Working on either side of the tree, Gunderson and Stewart notched the tree with their axes about three feet above the ground. Flat pieces of timber, approximately six feet in length and eighteen inches broad, were lodged in these notches. Gunderson and Stewart then climbed onto the springboards and notched the tree again, this time six feet above the ground. The springboards were then placed in the new notches and the men climbed up on their high perches and began chopping the direction notch about nine feet above the ground.

The men worked in perfect rhythm on the narrow springboards, never losing their balance as they swung their axes. Skoviera was the relief feller. He replaced Gunderson on the springboard. Gunderson rested a few minutes, then replaced Stewart. This rotation continued throughout the felling operations.

After a deep cut had been made in the tree, the loggers started a fresh cut on the opposite side of the trunk with a two-man sixty-inch hand saw. Minutes passed. Then the huge tree began to creak threateningly. Gunderson handed the saw down to Stewart on the ground, then Skoviera and he leaped from the springboards as the tree crashed to earth.

Back at the loading area, we followed a loaded truck down the Ledo Road to the sawmill. As the converted 6 x 6 started out, sagging under its load of six logs, Roberts said: "Don't ever let anyone sell American equipment short. We've been using those 6 x 6's to haul our logs for months now. Each trip with a load averages between five and ten miles, and a truck carries a 600 percent overload. So far, we haven't had a single breakdown despite such punishment. Brother, that's performance!"

Lieutenant Marvin S. Houston, who owned a sawmill in Pitkin, Louisiana,

before the war, is in charge of the outfit's No. 1 mill. "Since January of this year," he said, "my boys have turned out 7,000,000 board feet of lumber. Which isn't hay for a small GI mill."

The mill turns out lumber in sizes varying from one inch by two inch by ten feet to twelve inch by twenty-four feet. Some pieces of lumber run as long as thirty-one feet, but the average length varies between fourteen and eighteen feet. Most of the mill's orders are for bridge timber and culvert abutments, although lumber also is produced for office furniture and military installations in North Burma. An idea of the Forestry Unit's output can be obtained from figures showing that its two sawmills have produced lumber for nearly 1,000 bridges and hundreds of revetments and culverts on the Ledo Road.

Ninety percent of the timber run through the mills in North Burma is hollong (*Dipterocarpus macrocarpus*) or makai (*Shorea assamica*). Both trees, 100 to 150 years old when ready for cutting, are evergreens common to Asia. The wood, when cured, is similar to North America's walnut, oak, or maple and, if exploited commercially, could be used for furniture and interior finishing.

The hollong produces the heaviest wood yet used for lumber. It weighs 100 pounds per cubic foot and is one of the few known species of tree which is too heavy to float. The makai, on the other hand, is of average weight for a hardwood, weighing fifty-five pounds a cubic foot. A few nahor, or iron-wood, trees are found in North Burma and have proved quite satisfactory for bridge timbers. Practically all trees encountered by the GI loggers in North Burma thus far have been evergreen. . . .

Roberts' proudest record is that his men lost only five working days during the past monsoon. Prior to the rains, it was feared that continuous mill operation would be impossible during the period from May until October. But the mill ran seven days a week, month after month, with but few exceptions during the rainy season.

Many times, the captain said, powerful bulldozers became mired in the mud. And it took, on most occasions, two D-7 cats and a TD-18 to pull out the stalled machine.

The only solution to the mud was the constant construction of new access roads into the jungles over which the logs could be skidded out to the loading area. The men built corduroy roads, plank roads, gravel roads, and when each road would bog down and become impassable they would construct another.

At the forward logging camps in Burma, where heavy equipment was not

available during the monsoon, elephants were used to drag the timber from the swampy jungle to the road. The elephants were driven by natives, and each beast made on the average of three to four trips into the jungle for logs each day. This was a slow but sure process. Each elephant would slowly drag a heavy length of timber out to the road, sometimes sinking up to its belly in mud and stagnant water. Each trip took nearly an hour and a couple of trips a day exhausted even the largest and most powerful of the elephants.

Farther south in Burma, the forward contingent of Roberts' unit, with Lt. James Pouncey in charge, will tell you that they've been the real trail-blazers of the GI loggers. Once, the No. 2 mill detachment—their official designation, set up logging and sawmill activities beyond the point of the Ledo Road, within sound of Jap gunfire. Since then, they have moved forward with Road Headquarters as the Ledo Road pushed on south into Burma, supplying timber for advance bridges and military installations.

Lieutenant Pouncey, who was in the lumber business in Stevenson, Washington, before the war, has his share of timber veterans, too. Such men as Sgt. Eugene Raymond, of Clallam Bay, Washington; Sgt. William Buchanan, of Riverside, California; T/3 Carl Blakeslee of Union City, Pennsylvania; T/Sgt. Clark Hobbs, of Manassas, Virginia; Pfc. Harry Frey, of Sagala, Michigan; Pfc. Jack Plotts, of Troy, Montana, and Pvt. Carmen Hernandez, of Salina, Kansas, are typical of the veteran lumbermen who are carrying their civilian skills on over into Army life.

T/3 Blakeslee, chief sawyer of the mill, is a flesh-and-blood refutation of the theory that "fathers aren't going to be drafted." Blakeslee, who was drafted before the war was many months old, is the father of six. "I am slightly puzzled," he says, "when I keep reading in the papers that fathers are about to be drafted." To which his fellow loggers

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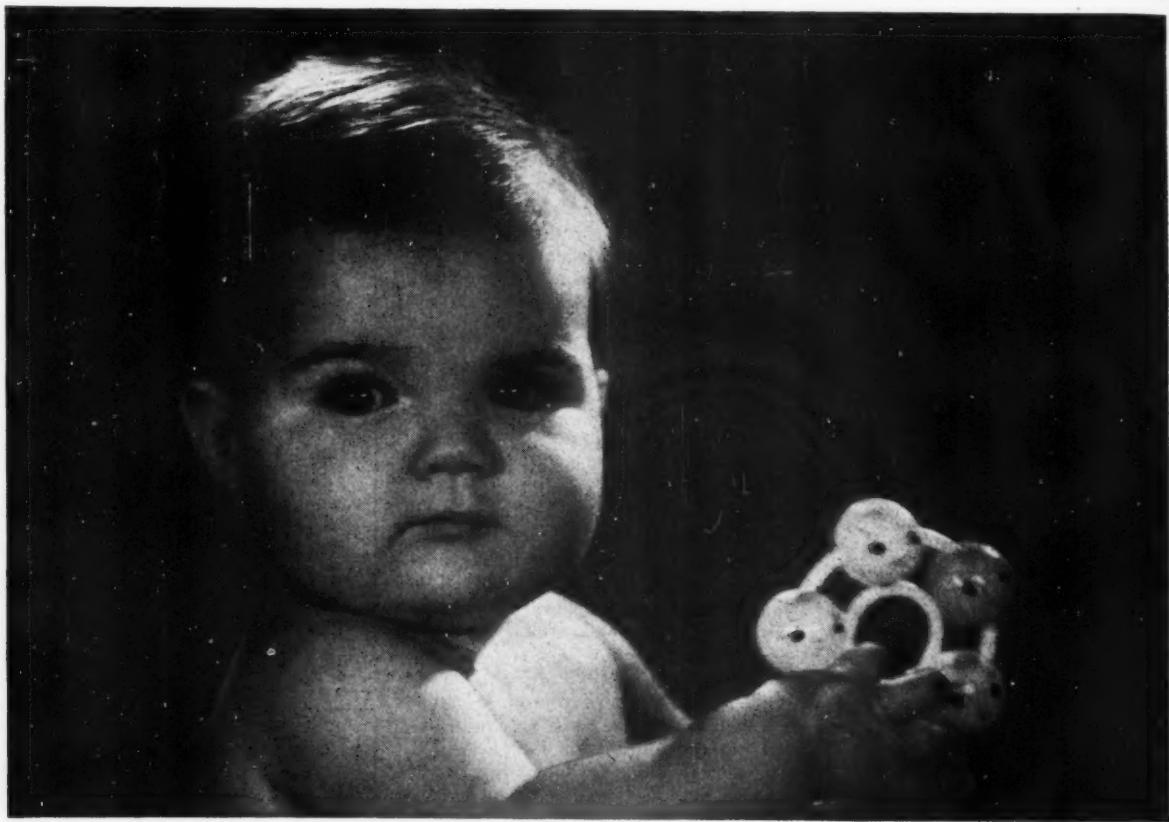


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snort derisively, "Horsefeathers, Blakeslee. With all those dependency allotments, you've found a home in the Army!"

I don't know whether it has anything to do with the tree that is reputed to grow in Brooklyn, but Flatbush has its representation in the forestry outfit. And, to add the expected screwball flourish, two of the Flatbushites are identical twins. Pfc. Robert Liptak was the first of the brothers to join the outfit. His brother, Pvt. Frank Liptak, transferred to the forestry unit just before it sailed for overseas. S/Sgt. George Gallagher is the third Brooklynite.

"I don't suppose any of the three ever saw a tree before they got in the Army," Pouncey chuckles. "But they're really

making up for lost time over here."

I remarked to Roberts during the course of our talks: "There must be great amounts of timber in North Burma which still haven't been touched."

Roberts agreed. "And it's high-grade lumber, too. Cured properly, it would make fine furniture or interior finishing."

"Then, do you believe the British will be able to exploit these timber resources after the war, using the Ledo Road?" I asked.

Roberts shook his head. "Definitely not. There is no market in this part of the world for lumber. Too many impoverished people who build with bamboo and mud. And transportation costs by road and rail to the ports at Calcutta or Rangoon would be prohibitive."

Subterranean Wonderland

(From page 171)

ingly beautiful "Frozen Waterfall" in flowstone. Beyond lies a "Fish Market" in living onyx. Amusingly enough, we had a "Strip of Bacon" with which to fry the fish, the "bacon" consisting of a rippled onyx strip with alternating bands of color representing nothing as much as the fat and lean stripes of that succulent meat.

Later our guide called attention to a miniature "Niagara Falls" in stone, even pointing out the rock contours which realistically represented the American and Canadian sides of that mighty spectacle.

Soon we came to the "Hall of Dreams." How high does the fissure ascend here? It is difficult to say, for thirty feet overhead it disappears in a thin, rising cleft. Before us were, if possible, an even greater variety of onyx formations of different types and colors. Among them was the "Leaning Tower of Pisa," a stalagmite of an estimated 6,000,000 years of growth! Another dramatically scenic spot is "Mill Lake," where a small, crystal clear pond reflects the unique beauty of the magnificent onyx formations overhead.

Repeatedly, we pass large clusters of

onyx capillary tubes pendant from the roof. These tubes are exactly like an ice cream soda hollow straw, and of about the same diameter. Individual "straws" form in from eighty to a hundred years, but geologists are unable to explain why some seepage develops into these hollow tubes, while other seepage in the same area produces solid stalactites.

A sound of falling water was heard, and we accelerated our steps to enter "King Solomon's Temple." It is well named, for the sheer grandeur and beauty of this majestic rock chamber defy description. Walls of stone, swirled and draped like the heavy velvet curtains of the opera, rise twenty feet higher than the famous "Twin Domes" at Mammoth Cave. At the far end of the awe-inspiring spot "Ruby Falls" tumbles from a "secret" source 145 feet above the cavern's floor into a rock-bound pool. The base of the pool, where we stood, is deep in the heart of the earth, 1,120 feet beneath the surface of Lookout Mountain.

"Ruby Falls," incidentally, is somewhat of a mystery. Although a volume of 200 gallons a minute flows over the falls, it is not definitely known where

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TO PROVIDE A BASIS for informed postwar handling of one of the country's most important natural resources, The American Forestry Association is undertaking a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when the manifold problems of reconstruction are at hand.

The project is a broad cooperative undertaking in which all interested individuals and agencies are invited to join. Its overall objective is to have available at the war's end down-to-the-minute facts as to the forest situation, upon which public and industrial policies of forest conservation, management and land economy can be based.

Public-spirited citizens, industrialists and organizations alert to the need of forest conservation and development in postwar economy have made the survey possible by underwriting more than ninety per cent of its estimated cost of \$250,000. The Association is now engaged in raising the balance.

Let's make it a joint undertaking. We invite your help in this financing. Do it now with a cash contribution, a pledge, or, buy a Series F or G War Bond in the name of The American Forestry Association and mail it to us.

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the water comes from, or where it goes. Some suggest that the falls interrupts the course of an underground river. This subterranean waterfall is named, incidentally, in honor of the explorer's wife, who accompanied him on his second trip back through the dark tortuous passageways.

Our guide estimated the age of the "Temple" chamber in these words: "It

has been here since the beginning of time."

We did not enter the lower level caverns which geologists estimate run the entire length of Lookout Mountain, or roughly, 100 miles. There is an unconfirmed story that at the time of the Civil War seven soldiers entered the lower caves, and that, much later, two came out alive at Gadsden, Alabama.

"Conuqueros"—Forest Destroyers of the Andes

(From page 179)

vast regions of devastation. In one instance, a party in search of cinchona had to travel on mules for three days over deforested mountains and valleys now even unfit for agriculture, before reaching original forests. At this very moment these forests are being reduced and burned by advancing *conuqueros*, who for generations have known nothing better than the destructive agricultural methods of the early Spaniards. The condition of the abandoned and already badly eroded farm land, on slopes often reaching a steepness of 100 percent, is aggravated by uncontrolled grazing of sheep and especially of goats. These animals reduce the remaining vegetation and make stabilization of the soil impossible.

The Venezuelan government is well aware of the seriousness of the agricultural situation in the Andes. An American delegation of the Soil Conservation Service has made a survey of the existing conditions and, on request from the Venezuelan government, submitted certain recommendations for the improvement of the agricultural methods in the Andes. One of the most important pre-

liminary steps to be undertaken is the removal of the uncontrolled herds of goats, which is by no means an easy task. Another proposal pressed by Venezuelan authorities is to abandon tillage of the soil for wheat and corn in favor of the establishment of range lands and the increased production of live stock, milk and cheese.

These, however, would obviously not produce enough food to meet the requirements of the existing population. Other means of livelihood must therefore be created for at least a portion of the Andean people. An extensive reforestation program which, for years, could give employment to a large number of persons, appears to be the most promising course of action. Through the large income derived from the Venezuelan oil fields, the government is in the fortunate position of being able to finance a huge reforestation program. The interest of the people in forestry and conservation is manifested through numerous articles on the subject which are appearing in the press. It is to be hoped that these sincere efforts will soon lead to a successful, active program.

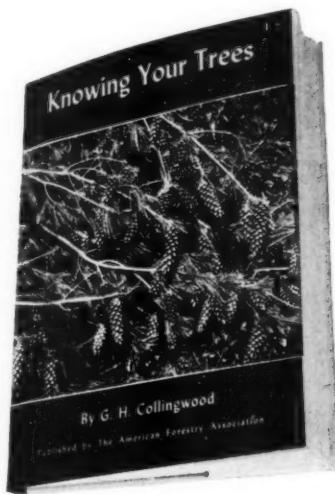
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